1

Longmans' Junior Mathematics

N V Brindley

DECIMALISATION

As soon as the official nomenclature for the new decimal currency is established, the relevant pages of this book will be revised and replaced by a new decimal section available free of charge to all purchasers

Longmans' Junior Mathematics

Stage 1

N V Brindley BA Headmaster
London Colney County Primary School
St Albans

8602
595.

Library
Calcutta
25/3, B. C. Road

Deputy Director of Public Instruction,
(Planning), West Bengal.

Longmans

[illegible]
Date 6.5.2008
Accn. No 13347

© N V Brindley 1967

First published 1967

Longmans, Green and Co Ltd
48 Grosvenor Street
London W1

Associated companies, branches and
representatives throughout the world

Designed and illustrated by
Richard Lewis and Christine Malone

Printed and bound in Great Britain
by Jarrold and Sons Ltd, Norwich

Contents

Deputy Director of Public Instruction,
(Planning), West Bengal.

Page Section

4 1 My Book of Numbers
4 2 Numbers and Figures
7 3 Addition
10 4 Using Numbers
11 5 Counting On
12 6 Using Yourself as a Measure
13 7 Odd and Even
15 8 Straight Lines
16 9 Length
16 10 More Measuring
17 11 Money
19 12 Subtraction
22 13 Counting Down
23 14 Finding the Difference
24 15 Addition and Subtraction
25 16 Subtracting Tens and Units
26 17 Right Angles
29 18 More Subtraction
30 19 Counting in 3's and 6's
31 20 Two Ways of Adding
33 21 Weighing
34 22 Adding Tens and Units
36 23 Shapes that Balance
38 24 Counting in 4's and 8's
39 25 How Big is a Brick?
39 26 Round Numbers
40 27 My Book of Weights
41 28 Counting in 5's
41 29 The Clock
42 30 Multiplication
44 31 The Milk Crate
45 32 Shillings and Pence
48 33 Shopping
49 34 How Big is Your Classroom?
49 35 Multiplication: Which Way?

Page Section

50 36 Using Numbers Again
50 37 Time
52 38 Picture Stories
53 39 How the Shopkeeper gives Change
54 40 My Book of Length
55 41 Multiplication: Tens and Units
57 42 Time: A.M. and P.M.
58 43 My Book of Time
58 44 Brackets
60 45 My Second Book of Time
61 46 More Brackets
62 47 Division
64 48 A Money Abacus
65 49 Watching Television
66 50 Two Kinds of Division
67 51 The Calendar
68 52 Halves, Quarters and Thirds
70 53 Capacity
71 54 Coins and Notes
72 55 Giving Change
73 56 The Story of Measuring
75 57 Bills
76 58 More Picture Stories
77 59 More Subtraction
79 60 Parallel Lines
79 61 Multiplication: Shillings and Pence
81 62 Making Graphs
82 63 Fractions
84 64 Using the Fraction Strips
85 65 Revision
91 Reference Pages
96 Tables

1

My Book of Numbers

How many children are there in your class?
How many boys are there?
How many girls are there?
How many children are present today?
How many classes are there in your school?
Use the answers to these questions to start a book. Call it "My Book of Numbers".

There are 23 doors in our school.
17 dogs live in my street.
There are 144 straws in a new box.

Each group of things you have counted is called a **set.** (The meanings of words printed like **set** are on pages 91 to 95.) What is the largest set in the book? What is the smallest set? What is the smallest set you could have of anything?

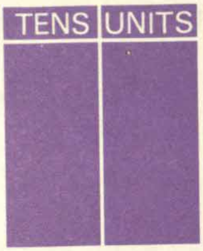
2

Numbers and Figures

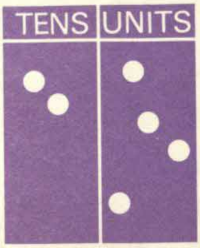
We use only ten **figures** to write all our **numbers.** Write out the ten figures.
Do not think that **figures** and **numbers** are the same. Figures are the shapes we write. We use numbers to answer "How many?" or "How much?" For each number from one to nine we need only one figure.

307

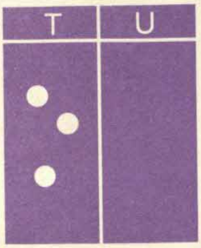
This number needs three figures.



Make an **abacus,** like this, in your book or on a piece of card. You will need counters to make the numbers.

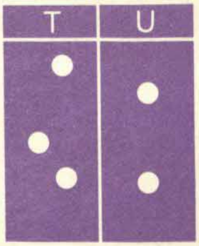


This number is 2 tens and 4 **units,** or 24 units. Make it with counters on your abacus.

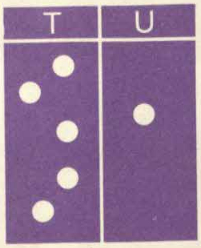


This number is 3 tens. When we write it down, we put a **zero** to show that the units column is empty. There are 30 units.

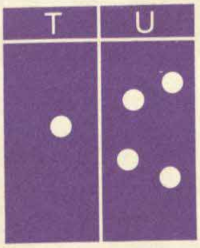
PRACTICE 1 Write out these numbers, using figures.



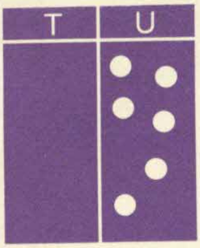
1)



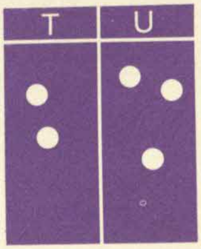
2)



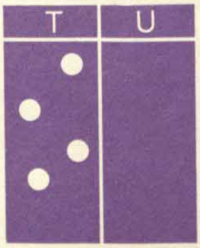
3)



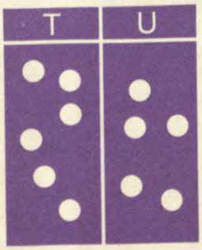
4)



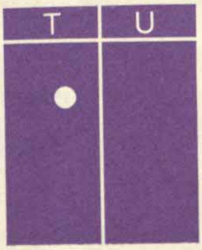
5)



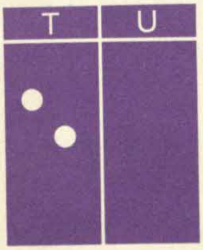
6)



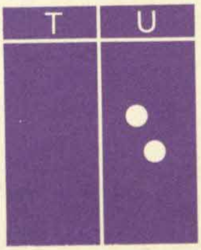
7)



8)



9)



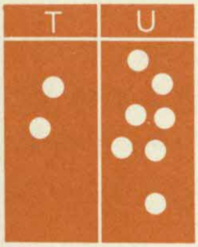
10)

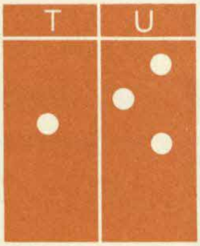
PRACTICE 2 Make these numbers with counters on your abacus.

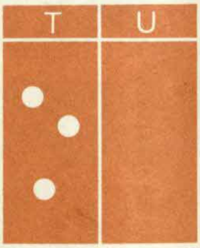
1) 25 2) 37 3) 20 4) 81 5) 3
6) 42 7) 50 8) 8 9) 10 10) 12

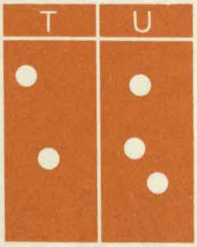
PRACTICE 3 Write these numbers, in figures, in order of size.
Start with the smallest.

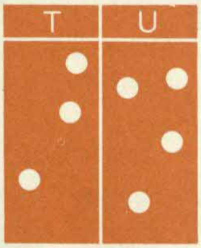
1) 34, 17, 26, 5, 60, 45, 19, 53
2) 46, 7, 58, 16, 33, 18, 4, 35
3) 12, 47, 20, 2, 38, 55, 76, 64
4)

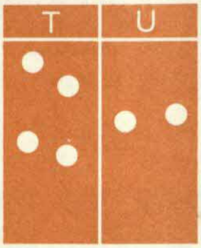




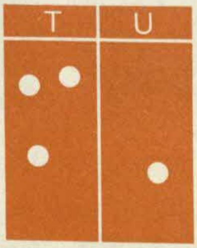


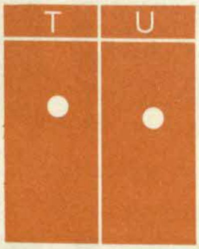


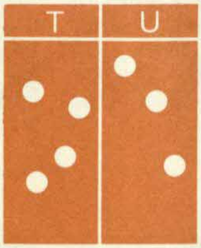


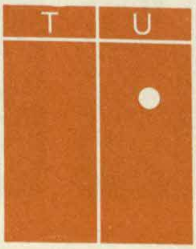


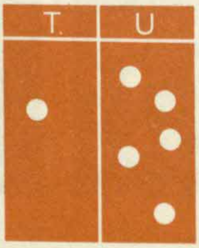
5)

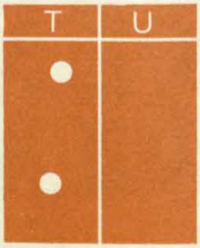




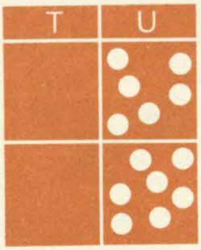








3 Addition



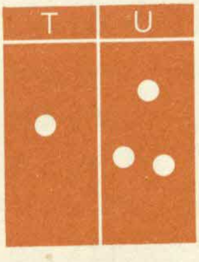
On the units column of your abacus put 6 counters. Then put 7 more. Write this in your book, like this:

$$\begin{array}{crr} & T & U \\ & & 6 \\ + & & 7 \\ \cline{2-3} \end{array}$$

The sign +, which we call **plus,** means that we put all the counters together. This is called **addition.**

Write this:

$$\begin{array}{crr} & T & U \\ & & 6 \\ + & & 7 \\ \cline{2-3} & 1 & 3 \end{array}$$



This means that another way of writing $6 + 7$ is 13. We can write this: $6 + 7 = 13$. We say, "6 plus 7 **equals** 13". A statement with = in the middle is called an **equation.**

If we do not know the answer to an equation, we can put a letter instead. $8 + 9 = x$ means that we do not know yet what $8 + 9$ is, though we could find out.

PRACTICE 4

Put these counters on your abacus, and find out what they make. Then write them into your book. You may write them underneath each other, or as an equation.

1) $5+9=x$ 2) $6+5=a$ 3) $4+8=p$
4) $7+7=y$ 5) $3+9=b$ 6) $5+7=q$
7) $6+9=z$ 8) $9+4=c$ 9) $8+3=x$
10) $6+8=y$ 11) $7+4=z$ 12) $8+5=a$
13) $7+9=b$ 14) $3+7=c$ 15) $9+8=d$
16) $5+3=p$ 17) $9+9=q$ 18) $6+4=r$
19) $7+8=s$ 20) $6+6=t$

PRACTICE 5

Do these in the same way.

1) $5+3+6=a$ 2) $4+7+2=p$
3) $6+9+8=x$ 4) $7+9+5=b$
5) $8+6+6=q$ 6) $9+7+8=y$
7) $9+7+9=c$ 8) $6+9+9=z$
9) $8+9+8=p$ 10) $9+8+9=q$

PRACTICE 6

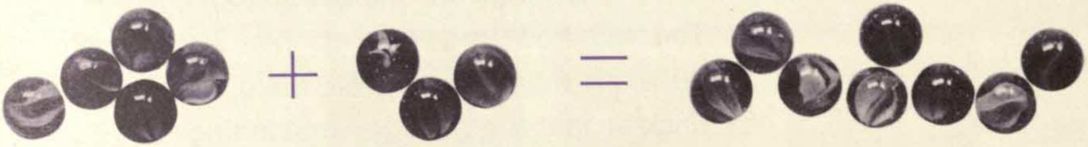
Now do these without using your abacus and counters.

1) $4+7=x$ 2) $8+6=y$
3) $9+3=z$ 4) $5+8=a$
5) $4+9=b$ 6) $8+8=c$
7) $9+5=p$ 8) $8+4=q$
9) $9+6=x$ 10) $5+5=y$
11) $3+8=z$ 12) $9+7=p$
13) $8+6+3=q$ 14) $5+8+5=a$
15) $9+7+6=b$ 16) $4+9+8=c$
17) $8+8+7=p$ 18) $8+5+9=q$
19) $7+5+8=x$ 20) $8+7+6=y$

Here is a little story, told in words.
Tom had 5 marbles, and he won 3 more. Then he had 8 marbles.

Here is the same story, told as an equation.

$5+3=8$



PRACTICE 7 Tell these stories as equations.

1) There were 9 passengers on the bus. At the next stop, 5 more got on, so there were 14 passengers on the bus.

2) In our team, there are 5 boys and 6 girls, so there are 11 children altogether.

3) Jim was 7 years old. In 5 years' time, he will be 12 years old.

4) On Thursday, Mother had 4 pints of milk. On Friday she had 3 pints, and on Saturday 6 pints. She had to pay the milkman for 13 pints of milk.

5) The farmer had 8 white hens, 5 brown hens and 4 black ones. Altogether he had 17 hens.

Here is the beginning of a story, in words.

Jean picked 6 apples off one tree and 9 off another. How many did she pick altogether?

Here is the whole story, told as an equation.

$6+9=15$

Here is the end of the story, in words.

Jean picked 15 apples altogether.

PRACTICE 8 Write the whole of each story as an equation, and then write the end in words.

1) Bobby had 8 stamps on one page of his album. He put in 7 more. How many stamps were on the page then?

2) There were 6 books on one shelf and 5 on another. How many books were there altogether?

3) Helen saved 8 shillings one week, 3 shillings the next week, and 5 shillings the week after that. How many shillings did she save altogether?

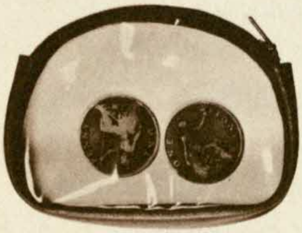
4) The train had 9 trucks on it, then 2 more were added. How many trucks were there then?

5) Jack scored 8 runs in the first innings of the cricket match, and 9 in the second innings. What was his total score?

6) Father planted 8 bulbs in one flower bed, 6 in another and 5 in another. How many bulbs did he plant altogether?

7) Alan had 6 birthday cards in the first post, and 8 more in the second post. How many cards did the postman bring altogether?

8) One book cost 2 shillings, another 5 shillings and another 7 shillings. How much did the 3 books cost?



9) George had 6 biscuits in one packet and 7 in another. How many biscuits did he have?

10) Jean had 2 pennies in her purse. Mother gave her 9 more pennies. How many did she have then?

PRACTICE 9 Now write a little story about each of these.

1) $6+7=13$ 2) $7+5=12$ 3) $9+6=15$

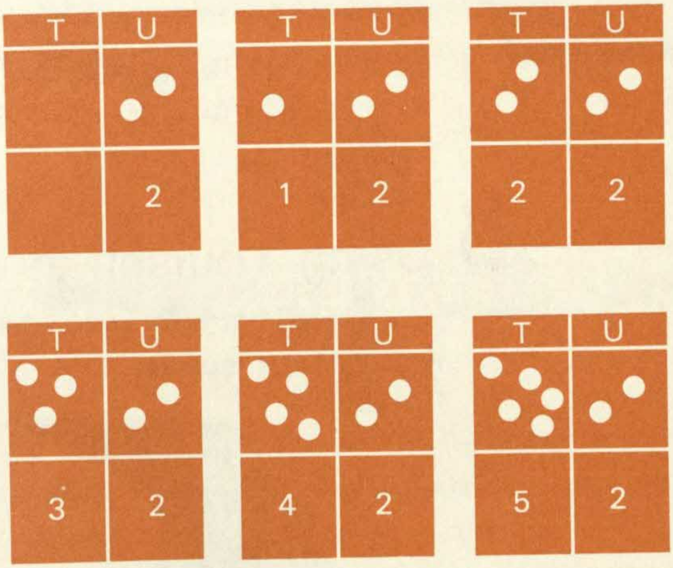
4) $5+8=13$ 5) $4+9+3=16$

4 Using Numbers

How many boys are there in your class when they are all at school? How many girls are there? Write down these numbers. How could you find out how many children there are in the class, using these answers? Write this down in words. Then write it down using only figures.

5 Counting On

Make these numbers on your abacus.



For each new number, one ten has been added.
What difference does this make to the units?

PRACTICE 10 Put the right numbers instead of the letters in these **series.**

1) 16, 26, x, 46, 56, 66, y, 86
2) 32, 42, 52, a, 72, b, 92
3) 27, 37, p, 57, 67, q, 87, 97
4) x, 29, 39, 49, y, 69, 79, 89
5) 3, 13, 23, 33, a, b, 63, 73

PRACTICE 11 **Count on** in tens from each of these numbers, getting as near as you can to a hundred without passing it.

1) 4 2) 7 3) 5 4) 23 5) 76
6) 48 7) 30 8) 51 9) 69 10) 82

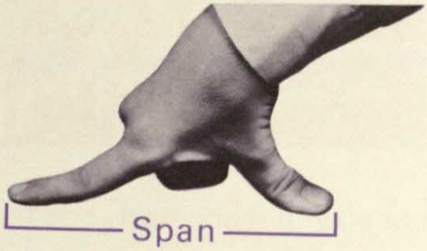
PRACTICE 12 Do these by counting on in tens.

1) $6 + 10 = x$
2) $57 + 10 = y$
3) $38 + 20 = z$
4) $49 + 30 = a$
5) $64 + 30 = b$
6) $25 + 60 = c$
7) $13 + 50 = p$
8) $54 + 40 = q$
9) $18 + 70 = m$
10) $43 + 40 = n$

6

Using Yourself as a Measure

Let us find out how wide your desk is. You can measure it in **spans.**



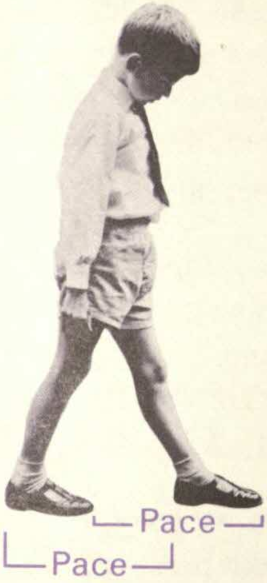
First, look at your desk, and write down how many spans wide you *think* it is. This is your **estimate.** Now measure your desk, and write down your answer. How good was your estimate?

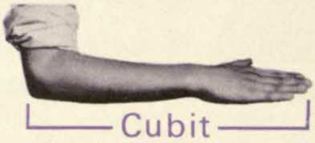
Always set out your answers in a table whenever you can, like this:

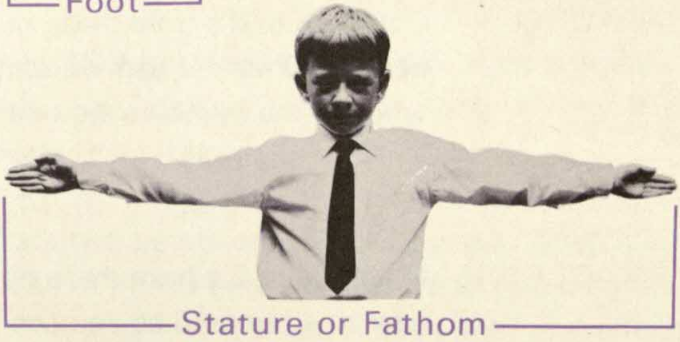
OBJECT	ESTIMATE	MEASURE
Desk	6 spans wide	$7\frac{1}{2}$ spans wide

Measure as many things as you can, using your span. Always write your estimate first.

Here are some other units you can use for measuring length.







Measure as many things as you can, using these.

Why should you not measure your pace from heel to toe?

Make sure you use the best measure each time.

Would you use spans or paces to measure the playground? Why?

Would you use feet or fathoms to measure the width of a door? Why?

7

Odd and Even

Start counting at one, and each time add on two. You will start: 1, 3, 5, 7 ... These numbers are called *odd* numbers. If you count on in 2's from any odd number, you have only odd numbers.

With which five figures do odd numbers always end?

Count on in 2's, starting with 2. You will begin: 2, 4, 6 ... These numbers are all *even* numbers. If you count on in 2's from any even number, you have only even numbers. Which five figures always end even numbers?

PRACTICE 13

6 18 9 24 93 50 32 71 45 67 83 11 34 22 48 47 60 75 89 96

1) Which of these numbers are even?
2) Which of these numbers are odd?
3) Which of them is neither even nor odd?

PRACTICE 14

Count on in 2's from these numbers, stopping as near to 40 as you can without passing it. Say whether the numbers are odd or even.

1) 7 2) 16 3) 23 4) 8 5) 25
6) 11 7) 32 8) 14 9) 20 10) 29

PRACTICE 15

Count on in 2's from these numbers, stopping as near to a hundred as you can without passing it. Say whether the numbers are odd or even.

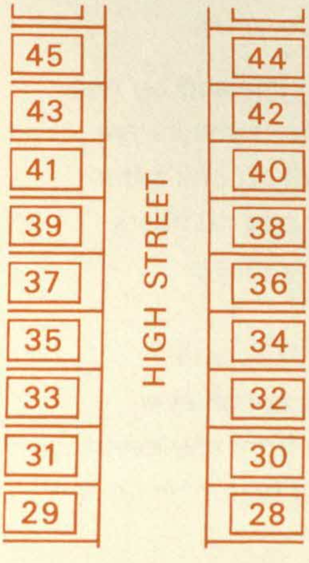
1) 69 2) 72 3) 81 4) 75 5) 84
6) 68 7) 77 8) 80 9) 93 10) 86

PRACTICE 16

Count down in 2's from these numbers. Say whether the numbers are odd or even.

1) 13 2) 20 3) 34 4) 27 5) 9
6) 41 7) 32 8) 25 9) 18 10) 36

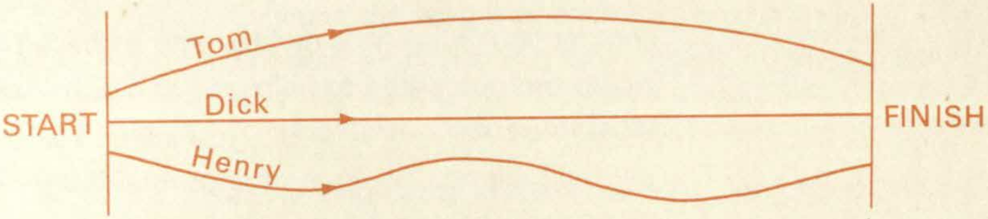
PRACTICE 17



The High Street, like most streets, has houses with odd numbers on one side. Those with even numbers are on the other side. Jack lives at 43 High Street, and Jill lives at 28 High Street.

1) Tom lives next door to Jack, counting up the street. What number is his house?
2) Helen lives next door but one to Jack, counting down the street. What number is her house?
3) Mary lives next door to Jill, counting down the street. What number is her house?
4) Dick lives next door but one to Jill, counting up the street. What number is his house?
5) What number is the first house on Jill's side of the street?

8 Straight Lines

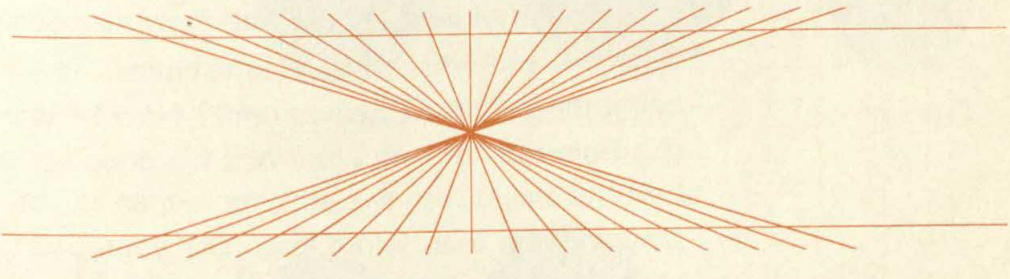


Tom, Dick and Henry ran a race. Here is a plan showing which way they ran. Who ran the shortest distance? What kind of line is it?

Mark two points on a piece of paper. Stretch a piece of thread between them, and pull it tight. What shape is the thread? Keep hold of the thread at each point, and try to find a shorter distance between the two points. Now say what a **straight line** is.

Write in your book saying what you did and what you found out.

Fold a piece of paper, and press along the fold to make a firm edge. What shape is the fold? Look along it. This is a good way of seeing if a line is straight. Test your ruler in this way.

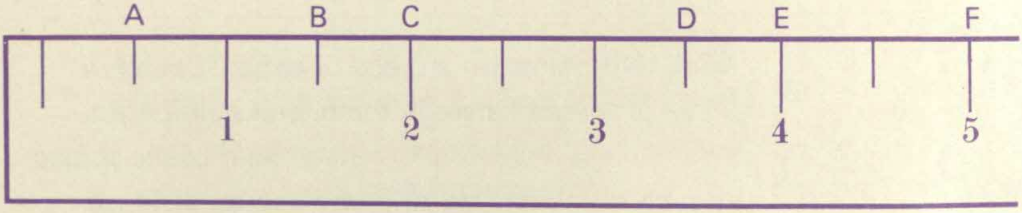


Look at this diagram. Do the two long lines look straight or curved? Now hold the page level with your eye, and look along each line. What do you notice?

9 Length

Look at your ruler. It is divided into inches. The inches are numbered to help you to count them. Most rulers are 1 foot long. How many inches are there along one edge of your ruler? How many inches are there in 1 foot?

Look at this picture of a ruler, marked in inches and half-inches.



PRACTICE 18 What is the distance between these letters?

1) E F 2) C E 3) C F
4) A B 5) A C 6) B C
7) B E 8) D E 9) B D
10) A E 11) B F 12) D F
13) A D 14) C D 15) A F

10 More Measuring

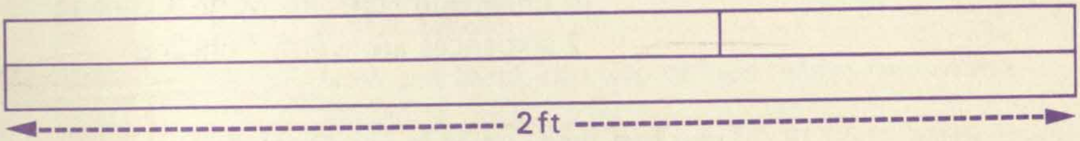
Take the set of lengths. Estimate how many pieces there are, and write down your estimate. Now count the pieces. Were you right? How far were you from the right answer? Was it a good estimate?

Sort the pieces into two sets, more than 1 foot long and less than 1 foot long. Use your ruler to help you. You should have some pieces left over. What length are they?

How many pieces are there in each group?

Find and match all pieces which are the same length.

Arrange the pieces in order of size.
Estimate the length of each piece in inches.
Set your work out in a table, like the one on page 12.
Measure each piece, and see how big your error was.
How long is the longest piece? How long is the shortest piece? How long is the middle piece?



Take the piece which is 2 feet long. Find two pieces that match this length when put end to end. Now find two more that measure 2 feet. Do this as many times as you can. Write each one as an equation, like this:

1 ft 4 ins + 8 ins = 2 ft

11 Money

Here are some British coins.

halfpenny
$\frac{1}{2}$d

penny
1d

threepenny bit
3d

sixpence
6d

shilling
1s

The Latin word for penny is *denarius*, and we still use the first letter of that word, *d*, to stand for penny or pence. The Latin word for shilling is *solidus*, and we still use the first letter, *s*, to stand for shilling, or shillings.

Remember: 2 halfpennies are worth 1 penny
12 pennies are worth 1 shilling
4 threepenny bits are worth 1 shilling
2 sixpences are worth 1 shilling.

PRACTICE 19 If you had these coins in your pocket, how much would you have?

1) 4 pennies
2) 1 threepenny bit and 2 pennies
3) 1 sixpence, 1 threepenny bit and 1 halfpenny
4) 2 pennies and 2 halfpennies
5) 1 sixpence and 3 halfpennies
6) 2 sixpences, 1 threepenny bit and 5 pennies
7) 1 shilling, 2 threepenny bits and 3 pennies
8) 3 sixpences, 2 pennies and 5 halfpennies
9) 1 sixpence, 1 threepenny bit and 4 pennies
10) 2 shillings, 2 threepenny bits, 1 sixpence and 5 halfpennies.

PRACTICE 20 Mother had in her purse a shilling, a sixpence, 2 threepenny bits, 2 pennies and a halfpenny. What coins would she use to pay each of these amounts?

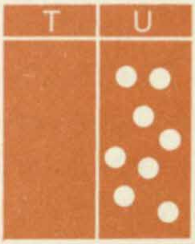
1) 10d
2) 5d
3) 1s 9d
4) 11½d
5) 7½d
6) 1s 3½d
7) 2s 1d
8) 1s 10½d
9) 1s 5½d
10) 2s 2½d

PRACTICE 21 Write a story, called "What I could buy with a shilling".

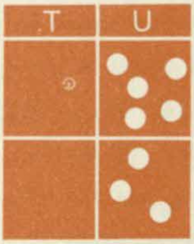
12

Subtraction

Put 8 counters in the units column of your abacus.



Now put them into two groups. Make one of the groups 5. What is the other one?



This way of splitting a number into two parts is called **subtraction.** We write it

$$\begin{array}{r} 8 \\ -5 \\ \hline 3 \end{array}$$

, and we say, 8 **minus** 5 equals 3. The 5 is there only to remind us what one of the groups must be. We can write this as an equation, $8 - 5 = 3$, but we still say, 8 minus 5 equals 3.

PRACTICE 22 Use your abacus to do these. Write them with the figures underneath each other, or as equations.

1) $9 - 2 = x$
2) $6 - 5 = y$
3) $7 - 4 = z$
4) $8 - 2 = a$
5) $7 - 5 = b$
6) $5 - 2 = c$
7) $9 - 3 = p$
8) $6 - 4 = q$
9) $9 - 4 = x$
10) $4 - 2 = y$
11) $2 - 1 = z$
12) $7 - 6 = a$
13) $6 - 3 = b$
14) $5 - 4 = c$
15) $4 - 1 = p$
16) $8 - 4 = q$
17) $9 - 8 = r$
18) $8 - 5 = s$
19) $3 - 2 = t$
20) $8 - 1 = u$

PRACTICE 23 Now do these without your abacus.

1) $6 - 1 = x$
2) $3 - 1 = y$
3) $4 - 2 = z$
4) $5 - 1 = p$
5) $8 - 3 = q$
6) $9 - 7 = r$
7) $7 - 2 = a$
8) $9 - 5 = b$
9) $6 - 3 = c$
10) $8 - 6 = x$
11) $9 - 1 = y$
12) $6 - 2 = z$
13) $7 - 1 = p$
14) $8 - 4 = q$
15) $2 - 1 = a$
16) $5 - 3 = b$
17) $9 - 6 = c$
18) $8 - 7 = d$
19) $7 - 3 = x$
20) $4 - 3 = y$

Here is a story told in words.
There were 9 eggs in the refrigerator. Mother used 4 eggs. There were 5 eggs left.
Here is the same story, told as an equation. $9 - 4 = 5$. This means that Mother split the 9 eggs into two sets. One set was 4 eggs and the other was 5 eggs. Mother used the set of 4 eggs, and left the set of 5.

PRACTICE 24 Tell these stories, using only equations.

1) Ronald had 7 marbles. He lost 3, and then he had 4 marbles.

2) Father planted 8 wallflowers. The dog scratched up 3, so there were only 5 wallflowers left.

3) Peter will have a bicycle when he is 12. He is only 9. He must wait 3 years for his bicycle.

4) There were 9 balloons at the party. 3 burst, so there were 6 left.

5) The bus carried 6 passengers. 2 got off at the next stop. Then there were 4 passengers on the bus.

WORLD CUP GO TO IT WITH THE DAILY EXPRESS

WORLD CUP GO TO IT WITH THE DAILY EXPRESS

8602

PRACTICE 25 Write these stories as equations, and then turn the end of the story back into words.

1) Mother took 5 bottles of milk. She used 2 at breakfast. How many bottles were left then?

2) There are 9 children in our team. 5 of these are girls. How many are boys?

3) Father had 7 shillings in his pocket. He spent 4 shillings. How many did he have then?

4) Jack had 8 stamps. He put 3 on one page of his album. How many had he still to put in?

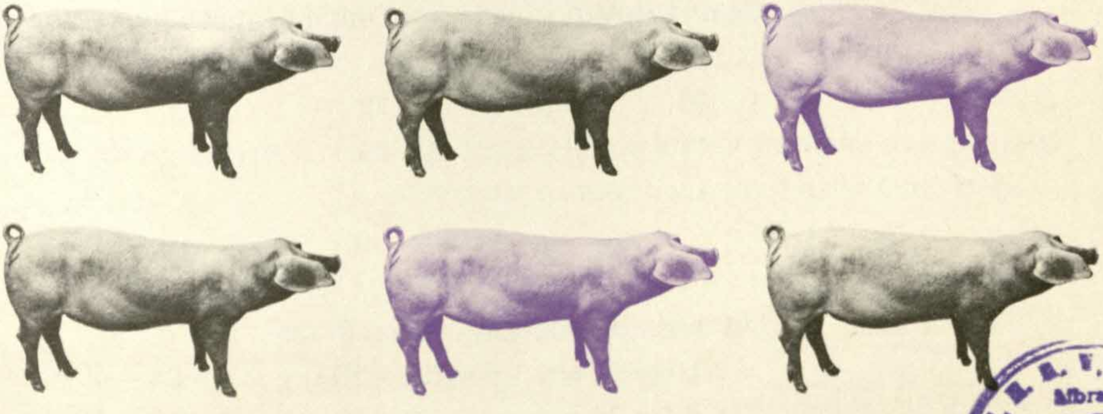
5) Mother bought 6 pounds of sugar. She used 4 pounds to make jam. How many pounds of sugar were left?

6) The postman had 9 parcels. He delivered 2 parcels in the first street. How many had he still to deliver?

7) The grocer had 8 tins of fruit. Mother bought 2. How many tins did the grocer have then?

8) Timothy had 7 marbles. After playing against Terry, he had only 5. How many did he lose?

9) Farmer Giles had 6 pigs. 4 were black, and the rest were coloured. How many coloured pigs did he have?

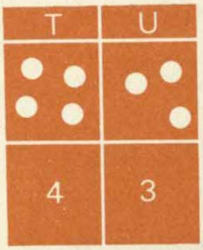


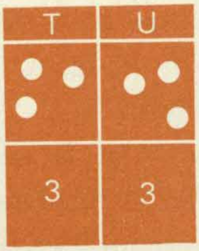
10) Mary had 5 toffees. Now she has 2 left. How many did she eat?

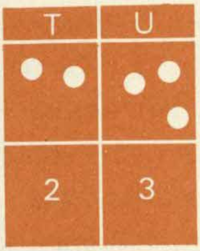
Date 6.5.2008
Accn. No 13347
Library

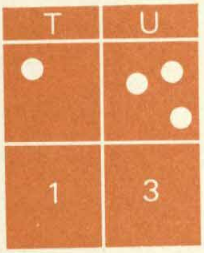
13 Counting Down

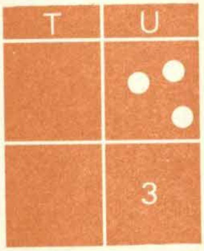
Make these numbers on your abacus.











For each new number, one ten has been taken away. What difference does this make to the units?

PRACTICE 26 Put the right numbers instead of the letters in these series.

1) 85, 75, x, 55, 45, 35, y, 15, 5
2) 78, 68, 58, a, 38, 28, b
3) 94, p, 74, 64, 54, q, 34, 24
4) x, 71, 61, 51, 41, y, 21, 11
5) 97, 87, 77, p, q, 47, 37, 27

PRACTICE 27 **Count down** in tens from each of these numbers, as far as you can.

1) 46 2) 58 3) 72 4) 64 5) 53
6) 91 7) 49 8) 75 9) 67 10) 86

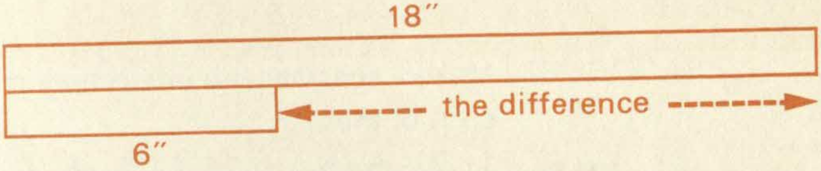
PRACTICE 28 Do these by counting down in tens.

1) $62-10=x$ 2) $55-20=y$ 3) $84-40=z$
4) $47-20=a$ 5) $73-50=b$ 6) $96-40=c$
7) $64-60=p$ 8) $88-50=q$ 9) $59-30=x$
10) $92-60=y$

14 Finding the Difference

Take the set of lengths. How long is the shortest? How many inches long is the longest? Put the shortest by the side of the longest. How much longer is the long piece?

Can you find a piece which will fit into the space?



Write this down as an equation: $18 - 6 = 12$.

We say that the **difference** is 12 inches. This is another meaning for a subtraction sum.

How much shorter is the short piece? Write this as an equation. What can you say about your answer?

Take ten other pairs of lengths, and find the difference for each pair. Write each as an equation. Find as many pairs as you can with a difference of 6 inches, and write each as an equation. Find as many pairs as you can with differences of 7 inches, 8 inches, 9 inches and 10 inches.

PRACTICE 29 Here are some stories for you to write as equations. Do not forget to turn the end of each story back into words.

1) John's pencil is 6 inches long. Peter's is 4 inches. Whose pencil is longer? What is the difference in their lengths?

2) The journey into town is 7 miles by one road, but 9 miles by another. What is the difference between the two journeys?

3) Mary had 8 marks in a test. Jimmy had 5. Who had more marks? How many more?

4) Arnold is 7, and his sister Eileen is 14. How much older is Eileen?

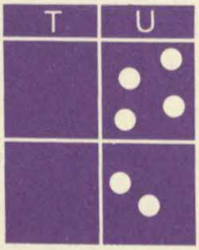
5) Yesterday, Billy read 3 pages of his book. Today, he read 9 pages. How many more pages did he read today?

PRACTICE 30 Make a sensible and interesting story about each of these.

1) $9-4=5$ 2) $7-2=5$ 3) $5-3=2$
4) $8-4=4$ 5) $6-1=5$

15 Addition and Subtraction

Do this **sum,** using your abacus: $6-4=2$. You have split the 6 into two sets, 4 and 2.



Now do this on your abacus: $6-2=4$. Once again, you have split the 6 into two sets, 4 and 2. Now do this on your abacus: $4+2=6$. Here again, you have two sets of 4 and 2, only this time you have put them together again, instead of splitting them.

You can see from this that the three sums

$6-4=2$ $6-2=4$ $4+2=6$

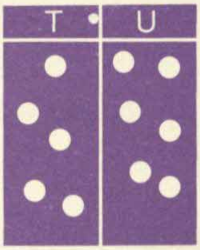
are really the same way of arranging the counters.

PRACTICE 31 Use your abacus to find which of these are the same. Each time, write out the three sums which are the same, as we have done above.

9 − 7	7 − 2	8 − 2	8 − 6	5 − 2
5 + 2	9 − 5	5 − 3	5 + 4	7 + 2
9 − 4	6 + 2	9 − 6	7 − 3	6 − 2
2 + 3	6 − 4	9 − 2	1 + 3	3 + 5
8 − 5	3 + 6	7 − 4	9 − 3	4 − 3
4 + 3	7 − 5	4 − 1	4 + 2	8 − 3

16

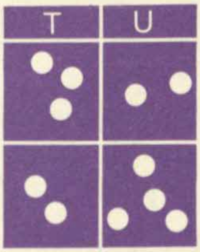
Subtracting Tens and Units



Make the number 56 on your abacus. Now do the subtraction sum

$$\begin{array}{rr} \text{T} & \text{U} \\ 5 & 6 \\ -3 & 2 \\ \hline \end{array}$$

You must split 56 into two sets, so that one is 32 and the other is 24.



$$\begin{array}{rr} \text{T} & \text{U} \\ 5 & 6 \\ -3 & 2 \\ \hline 2 & 4 \end{array}$$

PRACTICE 32 Do these in the same way using your abacus.

1) $$\begin{array}{rr} T & U \\ 4 & 7 \\ -2 & 4 \\ \hline \end{array}$$

2) $$\begin{array}{rr} T & U \\ 5 & 8 \\ -3 & 7 \\ \hline \end{array}$$

3) $$\begin{array}{rr} T & U \\ 3 & 6 \\ -1 & 2 \\ \hline \end{array}$$

4) $$\begin{array}{rr} T & U \\ 7 & 5 \\ -4 & 1 \\ \hline \end{array}$$

5) $$\begin{array}{rr} T & U \\ 8 & 7 \\ -1 & 5 \\ \hline \end{array}$$

6) $39 - 25 = x$

7) $86 - 64 = y$

8) $65 - 53 = z$

9) $49 - 38 = a$

10) $68 - 4 = b$

PRACTICE 33 Do these without using your abacus.

1) $56 - 25 = p$

2) $79 - 37 = q$

3) $45 - 12 = r$

4) $57 - 42 = a$

5) $38 - 5 = b$

6) $85 - 44 = c$

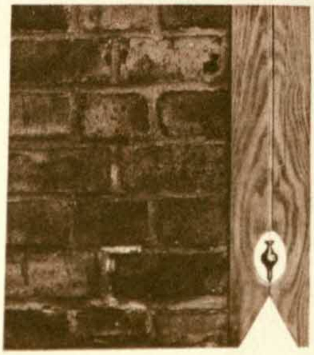
7) $67 - 3 = d$

8) $89 - 56 = x$

9) $76 - 53 = y$

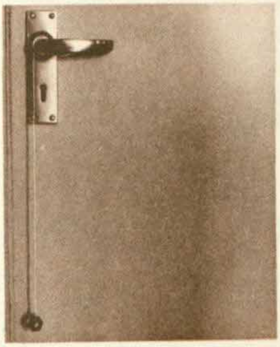
10) $48 - 36 = qy$

17 Right Angles



When a bricklayer builds a wall, he takes great care to have it both level and upright. If it were not, it might soon fall over. He uses a **plumb-line** to make sure it is upright. This is a string or cord with a weight at the end. (The weight is sometimes made of lead; the Latin word for lead is *plumbum*.) Why is it called a plumb-line? The line always hangs straight down. The line is always **vertical.**

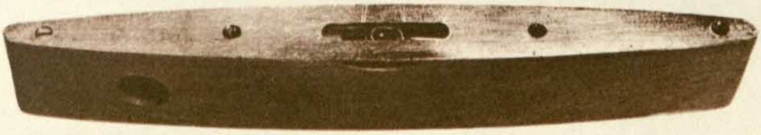
Make a plumb-line by tying a weight to the end of a piece of thin string. Use it to check the walls, doors, windows and cupboards of your school.



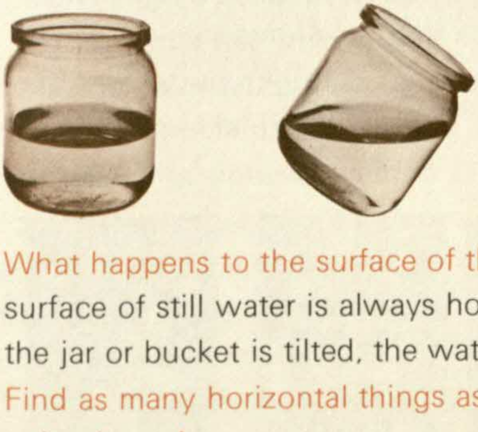
S.C.E.R.T., W.B. LIBRARY
Date........................
Acc. No....................

Are they all vertical? Find as many vertical things as you can. Write down what you find.

The bricklayer uses a **spirit-level** to make sure the wall is level, or **horizontal.** (Find out what the **horizon** is, and what connection it has with a horizontal line.) If you can, look at a spirit-level and see how it works.

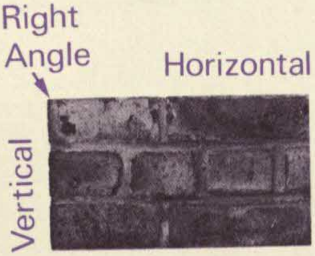


Put some water into a tumbler or jar. Tilt the jar.

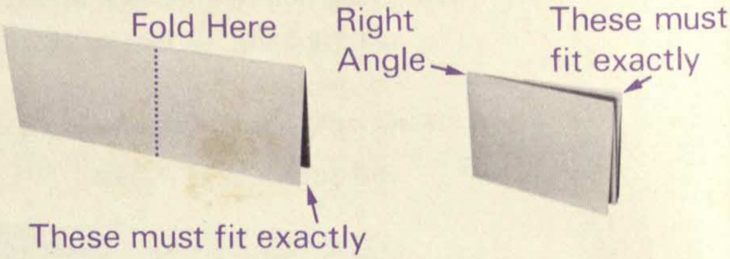


Library
25/3, S. C. Road
Calcutta

What happens to the surface of the water? The surface of still water is always horizontal. Even if the jar or bucket is tilted, the water stays horizontal. Find as many horizontal things as you can, and write them down.

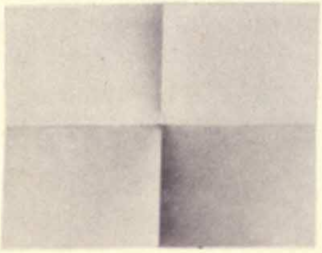


Lines which are horizontal make a **right-angle** with lines that are vertical. When two lines make a right-angle, we say that they are **perpendicular** to each other. The top of the wall is perpendicular to the side. The side is perpendicular to the top.



Fold a piece of paper once. Do you remember what shape the fold is? Fold it again, so that one part of the first fold lies along the other part. Now you have made a right-angle. Can you fit it exactly into the corner of this page? If you can, that is a right-angle, too. There are right-angles all round us. The corner of your exercise book, the corners of doors and windows, are all right-angles. Use your folded paper to find as many right-angles as you can, and write them down.

Open out the paper again. How many right-angles do the folds make in the middle of the paper? How many right-angles together make a straight line?



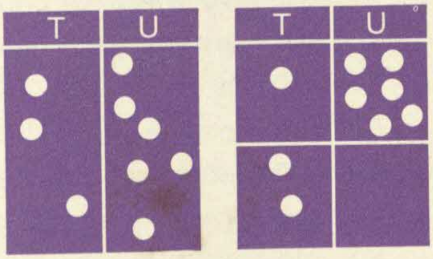
PRACTICE 34 Copy every letter which has a right-angle in it.

ABCDEFGHIJKLMN
OPQRSTUVWXYZ

18

More Subtraction

Remember that when there are no counters in a column, we can write a zero to fill the place. Make the number 36 on your abacus. Now do the subtraction sum 36 – 16.

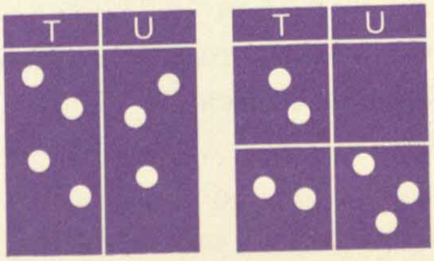


$$\begin{array}{rcc} & T & U \\ & 3 & 6 \\ - & 1 & 6 \\ \hline & 2 & 0 \end{array}$$

PRACTICE 35 Use your abacus to do these.

1) 54 – 24 = x
2) 62 – 22 = y
3) 45 – 35 = z
4) 71 – 41 = a
5) 85 – 55 = b

Make the number 43 on your abacus. Now do the subtraction sum 43 – 20. The zero means that there is nothing to be done to the 3 units, so it stays 3 units.



$$\begin{array}{rcc} & T & U \\ & 4 & 3 \\ - & 2 & 0 \\ \hline & 2 & 3 \end{array}$$

PRACTICE 36 Use your abacus to do these.

1) 63 – 30 = p
2) 59 – 40 = q
3) 71 – 20 = a
4) 87 – 30 = b
5) 76 – 70 = c

Now you know two ways of doing this sum, 63 – 40. If you are not sure of the first way, look back to PRACTICE 28.

PRACTICE 37 Do these in two ways. Of course, you should get the same answer each time.

1) 63 – 40 = a
2) 58 – 30 = b
3) 87 – 50 = c
4) 74 – 40 = d
5) 96 – 60 = x
6) 49 – 40 = y
7) 95 – 50 = z
8) 72 – 60 = p
9) 53 – 30 = q
10) 81 – 60 = r

19

Counting in 3's and 6's

Starting with 3, count on in 3's until you reach 30. Each time you must add 3. Practise this till you can do it without counting each time. Then write the numbers in your book. Try this again whenever you have a spare moment. Are your answers odd, or even, or both?

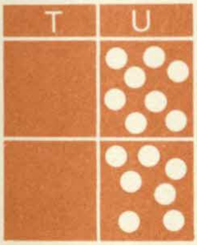
Do the same, starting with 6 and counting on in 6's till you reach 60. Are your answers odd, or even, or both? Which of them did you list when you counted on in 3's? Which would you get if you counted in 3's past 30?

PRACTICE 38 Put the right numbers in the place of the letters in these series.

1) 9, 12, 15, x, 21, 24, y, 30
2) 12, 18, 24, a, 36, 42, b, 54, 60
3) 27, 24, p, 18, 15, q, 9, 6
4) 48, 42, x, 30, 24, 18, 12, y
5) a, 24, b, 18, 15, 12

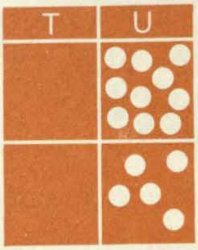
20

Two Ways of Adding



Put 8 counters in the units column of your abacus, and underneath put 7 more. This is $8+7$.

Take 2 counters from the set of 7 and put them with the 8. This leaves 5 in the bottom set. This is $8+2+5$.

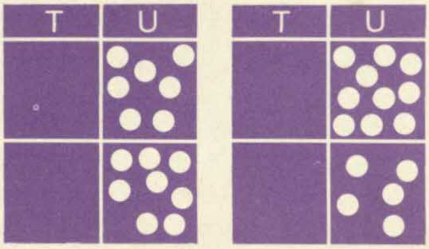


How many counters are there in the top set now?

We have changed the $8+7$ into $10+5$. Take off the 10 counters, and put 1 counter in the tens' column. Now we have 15.

Write in your book what you have done, like this:

$$\begin{aligned}&8+7\\=\,&8+2+5\\=\,&10+5\\=\,&15\end{aligned}$$



Now put 7 counters in the units column, and 8 more underneath. This time, split the 8, putting enough counters to make the 7 into 10. Write in your book what you have done, like this:

$7 + 8$
$= 7 + 3 + 5$
$= 10 + 5$
$= 15$

What is the difference between the answers?

PRACTICE 39 Try again with these numbers. Write each one in full, and say what you find about each pair.

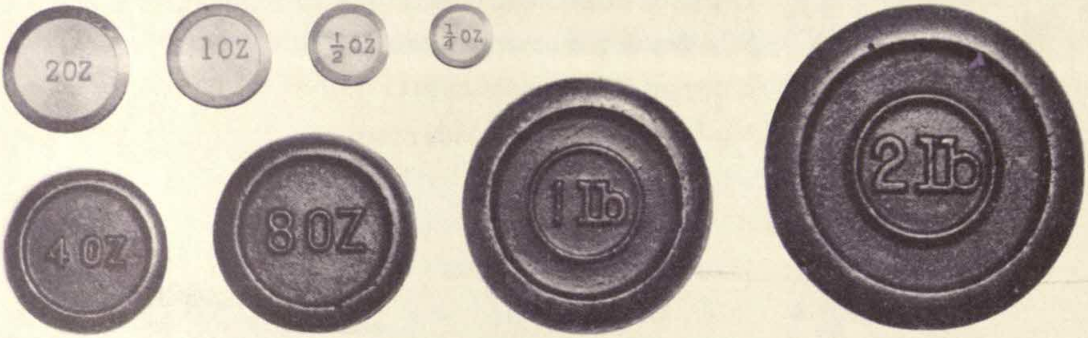
1) $9 + 5$ $5 + 9$ 2) $6 + 7$ $7 + 6$
3) $8 + 4$ $4 + 8$ 4) $7 + 9$ $9 + 7$
5) $5 + 6$ $6 + 5$ 6) $9 + 8$ $8 + 9$
7) $5 + 7$ $7 + 5$ 8) $8 + 6$ $6 + 8$
9) $4 + 7$ $7 + 4$ 10) $6 + 9$ $9 + 6$

Which of these do you find easier, $9 + 4$ or $4 + 9$? What difference will your choice make to your answer?

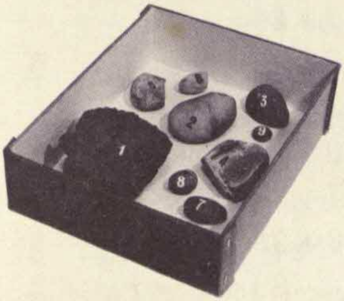
PRACTICE 40 Add these pairs of numbers by writing them down in whichever order you like. There is no need to write your working in full.

1) 5, 8   2) 3, 9   3) 8, 6   4) 7, 9
5) 4, 8   6) 9, 5   7) 3, 8   8) 6, 9
9) 2, 9   10) 9, 4

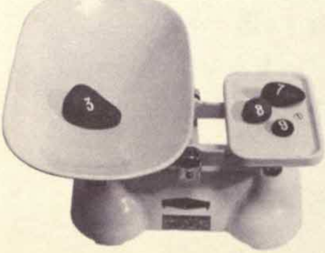
21 Weighing



Take the set of weights for the scales. Pick up the smallest and feel how heavy it is. Look at the weight marked on it, and copy it in your book. Its weight will be in *ounces*, often written *oz*. Pick up the next, feel its weight, and write it down. Do this with each weight in turn. Some of the heavier weights will be in *pounds*, often written *lb*.

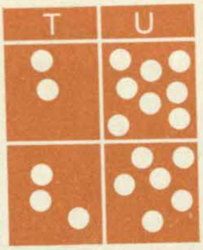


Now take the box of stones. Make a table like the one on page 12. Pick up a stone, estimate its weight, and write down your estimate. Weigh the stone, and write down its weight. How far out was your estimate? Was it a good one? Do the same with each stone in turn. Your estimates should get better as you go on.

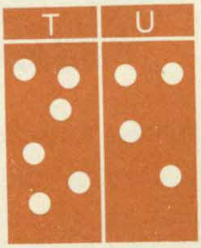


In how many ways can you balance the stones against each other on the scales? Write down the weights on each side, with an **equals** sign in between.

22 Adding Tens and Units



On your abacus, put counters to represent 28 and 36. We want to add them. What is the biggest number you can have in the units column?



Write it down like this:

$$\begin{array}{rr} T & U \\ 2 & 8 \\ +3 & 6 \\ \hline 6 & 4 \end{array}$$

or as an equation: $28 + 36 = 64$.

PRACTICE 41 Use your abacus to do these.

1) $25 + 17 = x$
2) $16 + 38 = y$
3) $19 + 24 = z$
4) $19 + 23 = a$
5) $25 + 26 = b$
6) $32 + 18 = c$
7) $23 + 14 = d$
8) $39 + 7 = p$
9) $28 + 38 = q$
10) $9 + 42 = r$
11) $17 + 34 = s$
12) $34 + 18 + 27 = t$
13) $16 + 23 + 18 = x$
14) $25 + 32 + 9 = y$
15) $14 + 33 + 15 = z$

PRACTICE 42 Do these without using your abacus.

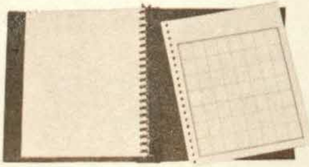
1) $18 + 25 = a$
2) $32 + 19 = b$
3) $37 + 16 = c$
4) $24 + 38 = p$
5) $23 + 17 = q$
6) $19 + 35 = r$
7) $28 + 13 = x$
8) $17 + 8 = y$
9) $26 + 34 = z$
10) $37 + 17 = a$
11) $25 + 14 + 19 = b$
12) $12 + 34 + 26 = c$
13) $16 + 30 + 19 = d$
14) $35 + 15 + 21 = p$
15) $31 + 14 + 23 = q$

PRACTICE 43 Write an equation about each of these stories. Then turn the end of each story back into words.

1) The grocer had 17 eggs on the counter and 48 more in a box. How many eggs did he have?

2) How many children are there in the class, if there are 19 boys and 18 girls?

3) There were 26 passengers downstairs on the bus, and 15 upstairs. How many passengers were on the bus?



4) Billy had 75 pages in his loose-leaf stamp album. How many were there after he put in 18 more pages?

5) Mr Jones is 27 years older than his son Dick, who is 8. How old is Mr Jones?

6) In Class 1 of the Infants, there were 27 children; in Class 2 there were 36, and in Class 3 there were 35. How many children were there in the infant department?

7) Jane picked 23 apples, Mary picked 19 and Ann picked 25. How many apples did they pick?

8) There were 26 books on the top shelf, 18 on the middle shelf, and 22 on the bottom shelf. How many books were in the book-case?

9) Tony had 17 marks in one test, 15 in another and 18 in a third. How many marks did he get altogether?

10) At the concert, there were 3 rows of half-crown seats. There were 27 people in the front row, 31 in the second row and 36 in the third row. How many people were in the half-crown seats?

PRACTICE 44 Write a sensible and interesting story about each of these equations.

1) $17+26=43$

2) $24+37=61$

3) 39 + 23 = 62

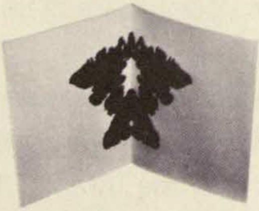
4) 15 + 34 + 28 = 77

5) 27 + 6 + 14 = 47

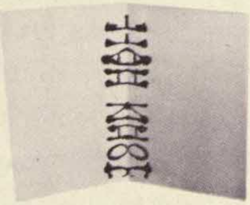
23

Shapes that Balance

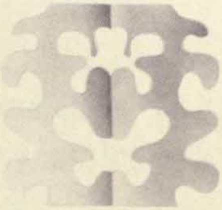
Put a blot of ink or paint on a piece of paper. Now fold the paper carefully through the blot while it is still wet. Press the paper together, then open it out. What do you notice about the blot now? Where does the fold run?

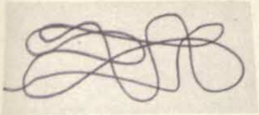


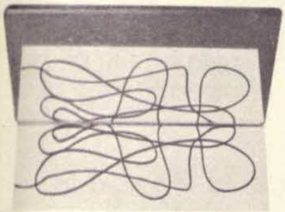
You can make a "ghost", by writing your name in ink along a fold, and then pressing the paper together while the ink is still wet.



Fold a piece of paper, and cut a pattern out of the folded paper. Take care not to cut away all the fold. Open the paper and look at the pattern now. In what way is the pattern the same as the blots and "ghosts" which you folded?



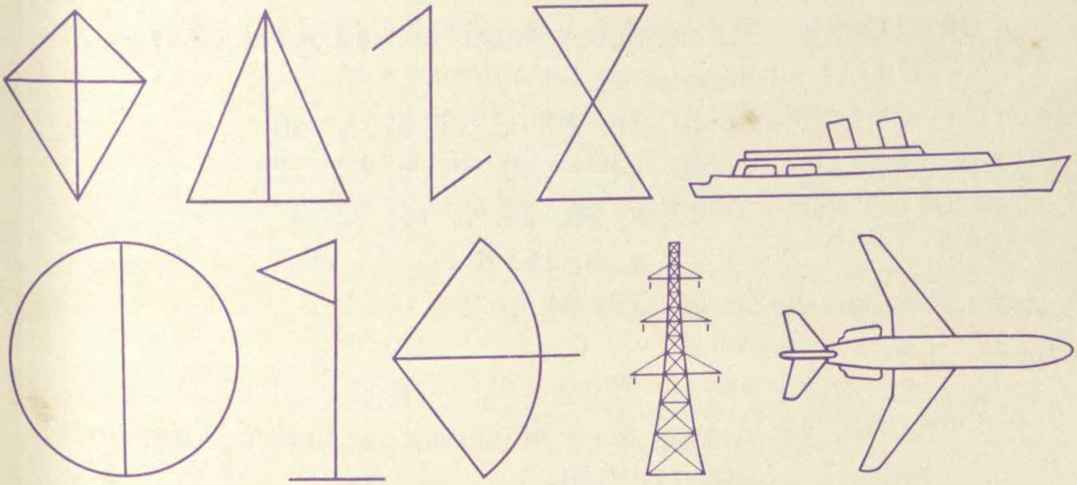




Scribble a line all over a small piece of paper. Hold a small mirror with a straight-edge on the paper, and look at the pattern now. Move the mirror to different places on the paper and look into it. What do you notice about the patterns you see?

Shapes like these. which "balance", which are the same on each side of a line going through the middle, are **symmetrical.** The line is the **axis of symmetry.**

Look at these shapes. Pick out the ones which are symmetrical, and copy them into your book. Turn the page sideways. Find some which are symmetrical with a different axis of symmetry.



Copy them into your book, and show with a dotted line the second axis of symmetry.

Look at the alphabet in PRACTICE 34. Copy into your book the letters which are symmetrical.

You may have to turn them sideways to see which are symmetrical. Some will have two axes of symmetry. Draw these sideways, as well as the right way.

Find as many symmetrical things as you can, and write them in your book. Draw pictures if you can.

24 Counting in 4's and 8's

Starting with 4, count on in 4's till you reach 40. Each time you must add 4. Practise this till you can do it without adding each time. Then write the numbers in your book. Try this again whenever you have a spare moment. Are your answers odd, or even, or both?

Do the same, starting with 8 and counting on in 8's till you reach 80. Are your answers odd, or even, or both? Which of them did you list when you counted on in 4's? Which would you get if you counted in 4's past 40?

PRACTICE 45 Put the right numbers instead of the letters in these series.

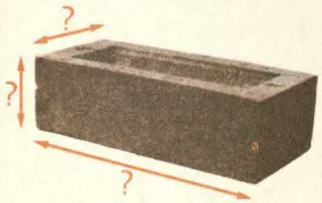
1) 12, 16, 20, x, 28, 32, y, 40
2) 16, 24, a, 40, 48, b, 64, 72
3) 36, x, 28, 24, y, 16, 12, 8
4) 40, a, b, 16, 8
5) 80, 72, 64, p, q

PRACTICE 46 Answer these. If you are not sure, look back to PRACTICE 31.

1) If $37 + 28 = 65$, what is $65 - 28$?
2) If $25 + 36 = 61$, what is $61 - 25$?
3) If $49 + 34 = 83$, what is $83 - 49$?
4) If $26 + 55 = 81$, what is $81 - 55$?
5) If $43 + 27 = 70$, what is $70 - 43$?

PRACTICE 47 Turn the numbers round in each question in Practice 46 to make another subtraction sum. Write them as equations.

25 How Big is a Brick?



Find a house brick. Estimate how long it is, how wide it is and how deep it is. Write down your estimates. Now measure it, and write down your measurements. How far out were your estimates? Were they good estimates?
Estimate the weight of the brick, and write down your estimate. Weigh the brick. How far out was your estimate?

26 Round Numbers

It is often useful to be able to make a number up to a **round number** such as 30, 40 or 50.
To make 16 up to the next round number, we must add 4. 16 + 4 = 20. To make 83 up to the next round number, we must add 7. 83 + 7 = 90.

PRACTICE 48 Make each of these up to the next round number.

1) 28
2) 37
3) 54
4) 75
5) 49
6) 61
7) 52
8) 46
9) 23
10) 65

Making a number up to a round number is often a help in adding. Let us add 38 and 7. We know we must add 2 to 38 to make it up to 40. We can take the 2 from the 7, leaving only 5 to add on to the 40.

$$\begin{aligned} & 38 + 7 \\ &= 38 + 2 + 5 \\ &= 40 + 5 \\ &= 45 \end{aligned}$$

If you are not sure about this, do it on your abacus. When you are sure you understand, do PRACTICE 49 in the same way.

PRACTICE 49 Set these out in the way you have just been shown.

1) $27 + 8 = x$
2) $46 + 7 = y$
3) $58 + 5 = z$
4) $35 + 9 = a$
5) $74 + 8 = b$
6) $69 + 4 = c$
7) $42 + 9 = d$
8) $83 + 8 = p$
9) $25 + 7 = q$
10) $56 + 6 = r$

PRACTICE 50 Now do these, without showing the working. Just set them out like an equation.

1) $38 + 7 = a$
2) $56 + 5 = b$
3) $47 + 6 = c$
4) $24 + 7 = d$
5) $19 + 8 = x$
6) $65 + 6 = y$
7) $86 + 8 = z$
8) $78 + 4 = p$
9) $44 + 9 = q$
10) $75 + 6 = r$
11) $37 + 9 = s$
12) $89 + 6 = t$
13) $27 + 7 = a$
14) $88 + 6 = b$
15) $54 + 6 = c$
16) $69 + 5 = d$
17) $45 + 8 = p$
18) $63 + 7 = q$
19) $57 + 5 = x$
20) $26 + 9 = y$

27

My Book of Weights

Make a book called "My Book of Weights". Arrange each page in five columns. In the first, write the name of what you are weighing. In the second, put your estimate. In the third, put the actual weight. In the fourth, put how near you were. In the fifth, say whether your guess was good or bad. Your estimates should get better as you go on.

OBJECT	ESTIMATE	WEIGHT	ERROR	
History book	15 oz	8oz	7oz	Bad
Cricket ball	4 oz	5oz	1oz	Good

28

Counting in 5's

Starting with 5, count on in 5's till you reach 50. What do you notice about the numbers you get each time? Which are odd? Which are even? Practise until you can write them down without adding each time.

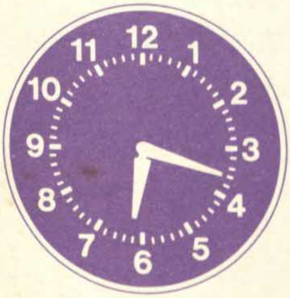
PRACTICE 51 Put the right numbers in the place of the letters in these series.

1) 5, 10, 15, x, 25, 30, y, 40
2) 3, 8, 13, 18, p, 28, 33, q, 43
3) 4, 9, a, 19, 24, 29, b, 39, 44
4) 31, 26, x, y, 11, 6, 1
5) 45, 40, 35, 30, x, y, 15, 10

29

The Clock

PRACTICE 52 Look at the clock face and then answer these questions.



1) Does the long hand tell the hours or the minutes?

2) What does the short hand tell?

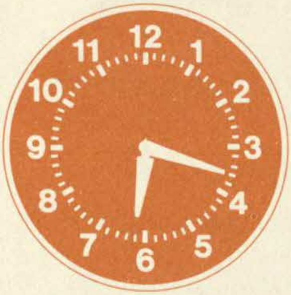
3) How many hours does the hour hand take to go once round the clock face?

4) How many minutes does the minute hand take to go once round the clock face?

5) When you answer these, remember how you counted in 5's.

How many minutes does it take the minute hand to go between these numbers on the clock?

a) 12, 1 b) 1, 3 c) 12, 3
d) 2, 5 e) 7, 11 f) 3, 4



g) 6, 8
h) 3, 6
i) 7, 10
j) 10, 3
k) 7, 8
l) 11, 1
m) 6, 9
n) 11, 12
o) 5, 10
p) 11, 2
q) 12, 6
r) 9, 12
s) 12, 4
t) 2, 8

6) On which number does the minute hand stop at these times?

a) a quarter past
b) half past
c) a quarter to
d) 15 minutes past
e) 5 past
f) 25 past
g) 10 past
h) 20 past
i) 10 to
j) 25 to
k) 5 to
l) 15 minutes to
m) 20 to
n) o'clock

30 Multiplication

Look at this sum: $7+7+7+7=28$
You could do this sum on your abacus, or you could remember that four 7's are 28.
If we remember that four 7's are 28, we write $4\times 7=28$. We call this, 4 times 7. We could write it 7×4, and call it 7 multiplied by 4.
Do the sum by adding, and by multiplying. Which way is quicker, addition or **multiplication?** Which takes up less space?

PRACTICE 53 Write out each of these in two other ways.

1) $3+3+3+3+3=15$
2) $8+8+8=24$
3) $3\times 6=18$
4) $4\times 9=36$
5) $7+7+7+7+7=35$
6) $2+2+2+2=8$
7) $6\times 8=48$
8) $5\times 4=20$
9) $8+8=16$
10) $2\times 7=14$

11) $4+4+4=12$
12) $8+8+8+8=32$
13) $6+6+6+6=24$
14) $5\times 9=45$
15) $7\times 6=42$
16) $7+7+7=21$
17) $6+6=12$
18) $5\times 6=30$
19) $4\times 7=28$
20) $9+9+9=27$

A quick way of doing multiplication sums is by counting on. To find what seven 4's are, count on in 4's, seven times, like this: 4, 8, 12, 16, 20, 24, 28. You can see that $7\times 4=28$.

PRACTICE 54

Do these sums by counting on.

1) $4\times 3=x$
2) $8\times 2=y$
3) $6\times 3=z$
4) $5\times 4=a$
5) $6\times 2=b$
6) $7\times 5=c$
7) $9\times 4=d$
8) $8\times 5=p$
9) $5\times 10=q$
10) $7\times 3=x$
11) $9\times 2=y$
12) $8\times 10=z$
13) $7\times 4=a$
14) $6\times 5=b$
15) $9\times 10=c$
16) $7\times 10=d$
17) $9\times 5=p$
18) $6\times 10=q$
19) $8\times 3=r$
20) $6\times 4=s$

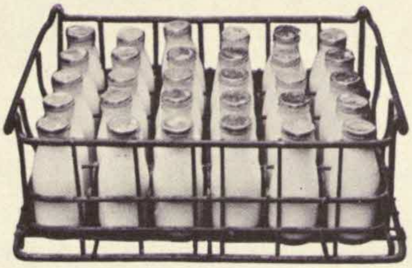
Of course, if you know what the answer will be, without counting on, that is quicker still. If you do not know, and are not sure about counting on, you can look at the multiplication table at the end of the book.

PRACTICE 55

Do these in the quickest way you can.

1) $6\times 4=p$
2) $5\times 3=q$
3) $7\times 6=r$
4) $9\times 3=s$
5) $5\times 7=x$
6) $4\times 8=y$
7) $6\times 9=z$
8) $3\times 7=a$
9) $8\times 6=b$
10) $4\times 9=c$
11) $9\times 6=d$
12) $5\times 8=x$
13) $4\times 6=y$
14) $3\times 8=z$
15) $6\times 7=p$
16) $2\times 9=q$
17) $8\times 7=r$
18) $6\times 8=a$
19) $5\times 9=b$
20) $3\times 6=c$

31 The Milk Crate



Look at the milk crate that your morning milk comes in. Draw a diagram of what you see. How many bottles can fit along one side? How many of these rows are there? How could you find the number of bottles the crate holds, using these two answers? Can you think of another way of finding out without counting?

PRACTICE 56 First write an equation about each of these stories, using **addition.** Then write the equation, using **multiplication.** Then turn the end of the story back into words.

1) The grocer had 9 boxes of eggs. In each box were 6 eggs. How many eggs did he have?

2) On each page of his stamp album, Peter has 8 rows of stamps. In each row, there are 6 stamps. How many stamps are there on each page?

3) Billy read 7 pages of his book each day. How many pages did he read in 5 days?

4) Father planted 3 rows of wallflowers, with 9 flowers in each row. How many wallflowers did he plant?

5) The football team had 6 cars to carry the players and the supporters. Each car carried 5 children. How many children went?

6) At Jean's party, when she was 7 years old, Mother put 4 sweets into a bag for each child. If

there were 8 children, how many sweets did Mother need?

7) A bar of chocolate has 6 sections. If I buy 7 bars, how many sections will I have?

8) Mother takes 4 pints of milk each day. How many pints must she pay for at the end of the week?

9) For pocket money, Dick has 3d each day except Sunday. How many pennies does he have each week?

10) I posted 8 letters, each with a 4d stamp. How much did it cost to send them?

PRACTICE 57 Write an interesting and sensible story about each of these sums.

1) 7 × 8 = 56
2) 6 × 6 = 36
3) 5 × 9 = 45
4) 4 times 8 = 32
5) 6 multiplied by 3 = 18

32

Shillings and Pence

When the shopkeeper counts his money, he puts the pennies into piles. Each pile has 12 pennies. Each pile of 12 pennies is worth 1 shilling. If there are 27 pennies, there will be two piles of 12 pennies, and 3 pennies over. This would be 2s 3d.

Try it with real money if you can. If not, use plastic or cardboard money, or counters.

PRACTICE 58 Use pennies or counters to change these into shillings and pence.

1) 15d 2) 19d 3) 26d 4) 18d 5) 23d

6) 14d 7) 20d 8) 24d 9) 17d 10) 30d

Here is a table of pennies and shillings.

12d = 1 × 12d = 1s

24d = 2 × 12d = 2s

36d = 3 × 12d = 3s

48d = 4 × 12d = 4s

60d = 5 × 12d = 5s

72d = 6 × 12d = 6s

84d = 7 × 12d = 7s

96d = 8 × 12d = 8s

108d = 9 × 12d = 9s

120d = 10 × 12d = 10s

PRACTICE 59 Use the table to do these. Do not use counters or pennies.

1) 16d 2) 29d 3) 74d 4) 63d 5) 50d

6) 87d 7) 46d 8) 100d 9) 128d 10) 117d

PRACTICE 60 When you do these, first find out how many pennies there are, then change them into shillings and pennies.

1) 8d + 7d = x shillings y pence

2) 9d + 4d = as bd

3) 11d + 10d = ps qd

4) 6d + 8d = xs yd

5) 7d + 9d = as bd

6) 4d + 11d = ps qd

7) 10d + 6d = xs yd

8) 8d + 5d = as bd

9) 9d + 11d = ps qd

10) 10d + 8d = xs yd

PRACTICE 61 Do these in the same way.

1) 3 × 11d = ps qd

2) 4 × 7d = as bd

3) 8d × 5 = xs yd

4) 5d × 9 = ps qd

5) 10d × 7 = as bd

6) 8 × 7d = ys zd

7) 4d × 8 = qs rd

8) 7 × 6d = bs cd

9) 11d × 8 = xs yd

10) 6 × 8d = ps qd

It is useful to be able to make money up to an exact number of shillings. We can make 3s 9d

up to an exact number of shillings by adding 3d.
3s 9d + 3d = 4s
We can make 2s 4$\frac{1}{2}$d up to an exact number of shillings by adding 7$\frac{1}{2}$d. 2s 4$\frac{1}{2}$d + 7$\frac{1}{2}$d = 3s.

PRACTICE 62 Make these up to the next exact number of shillings. You may use coins or counters if you wish.

1) 2s 11d 2) 4s 8d 3) 1s 6d
4) 3s 10d 5) 7s 9d 6) 5s 7$\frac{1}{2}$d
7) 2s 3$\frac{1}{2}$d 8) 8s 9$\frac{1}{2}$d 9) 6s 5$\frac{1}{2}$d
10) 9s 2$\frac{1}{2}$d

This is a useful way of adding money.

2s 9d + 8d
= 2s 9d + 3d + 5d
= 3s + 5d
= 3s 5d

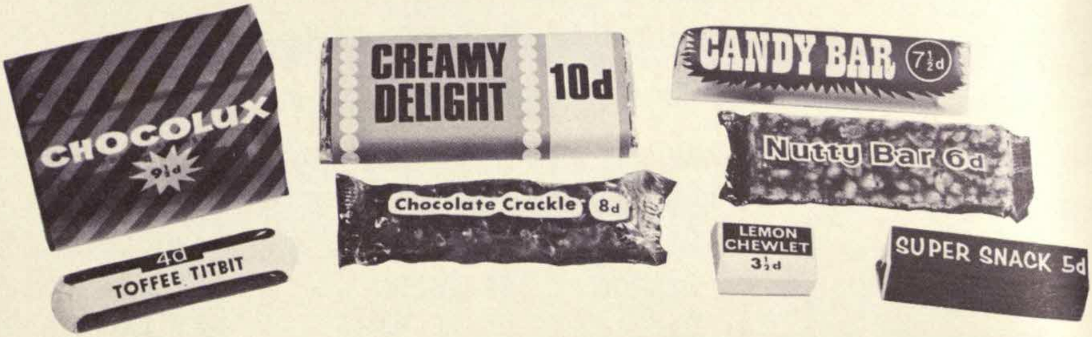
PRACTICE 63 Do these in the same way, showing the working.

1) 3s 10d + 6d 2) 2s 11d + 8d
3) 5s 9d + 10d 4) 8s 7d + 9d
5) 10d + 7d 6) 4s 8d + 11$\frac{1}{2}$d
7) 3s 9$\frac{1}{2}$d + 5$\frac{1}{2}$d 8) 2s 6$\frac{1}{2}$d + 8$\frac{1}{2}$d
9) 5s 10$\frac{1}{2}$d + 6d 10) 6s 8$\frac{1}{2}$d + 9d

PRACTICE 64 Do these without showing the working.

1) 4s 8d + 10d 2) 6s 7d + 6d
3) 2s 6d + 8d 4) 5s 8d + 7d
5) 7s 11d + 10d 6) 3s 10d + 8$\frac{1}{2}$d
7) 8s 6d + 9$\frac{1}{2}$d 8) 4s 9d + 10$\frac{1}{2}$d
9) 6s 7$\frac{1}{2}$d + 8$\frac{1}{2}$d 10) 4s 9$\frac{1}{2}$d + 7$\frac{1}{2}$d
11) 2s 6$\frac{1}{2}$d + 9$\frac{1}{2}$d 12) 10$\frac{1}{2}$d + 9d
13) 5s 8$\frac{1}{2}$d + 8d 14) 6s 7$\frac{1}{2}$d + 11d
15) 3s 7d + 6$\frac{1}{2}$d 16) 7s 10d + 10$\frac{1}{2}$d
17) 7s 9$\frac{1}{2}$d + 6$\frac{1}{2}$d 18) 5s 8$\frac{1}{2}$d + 5$\frac{1}{2}$d
19) 2s 7$\frac{1}{2}$d + 10d 20) 8s 10$\frac{1}{2}$d + 8d

33 Shopping



PRACTICE 65 How much must you pay if you buy these? Set each one out as an equation.

1) A Chocolate Crackle and a Super Snack.
2) A Creamy Delight and a Toffee Titbit.
3) A Chocolux and a Chocolate Crackle.
4) A Nutty Bar and a Candy Bar.
5) A Lemon Chewlet and a Creamy Delight.
6) Two Candy Bars.
7) A Nutty Bar, a Toffee Titbit and a Chocolate Crackle.
8) A Super Snack, a Lemon Chewlet and a Chocolux.
9) Two Creamy Delights and a Chocolux.
10) A Candy Bar and two Super Snacks.
11) Five Super Snacks.
12) Nine Toffee Titbits.
13) Six Creamy Delights.
14) Seven Super Snacks.
15) Ten Chocolate Crackles.

PRACTICE 66 Use this money to buy sweets.

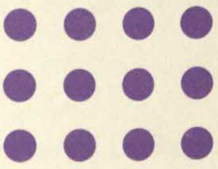
1) Find two ways of spending 8d.
2) Find one way of spending 9d.
3) Find three ways of spending 10d.
4) Find three ways of spending 11d.
5) Find four ways of spending a shilling.

34 How Big is Your Classroom?

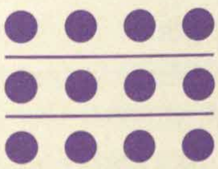
Look at your yardstick. It is called a yardstick because it is 1 yard long.
Estimate how many yards long your classroom is, and write down your answer. Now measure the room with the yardstick. How far out was your estimate? Was it a good estimate?
Estimate how many feet long your classroom is, and write down the number. Now measure the room with a ruler or tape-measure. How far out was your estimate? Was it better than your last one? Use your ruler to find how many feet there are in 1 yard. How could you have found the length in feet without measuring, just by using your first answer?

35 Multiplication: Which Way?

What is the difference between 4 times 3, and 3 times 4? Does it matter which way you read them?
Put out 12 counters like this:

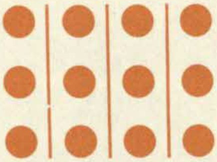


Look at them this way:



We can see that 3 lines of 4 make 12.
$3 \times 4 = 12$

Now look at them this way:



We can see that 4 lines of 3 also make 12.

$4 \times 3 = 12$

There is no difference in the answers.

PRACTICE 67 Use your counters to show that these are the same. Draw pictures of what you do.

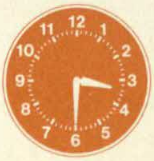
1) $5 \times 2 \quad 2 \times 5$
2) $6 \times 3 \quad 3 \times 6$
3) $2 \times 4 \quad 4 \times 2$
4) $5 \times 3 \quad 3 \times 5$
5) $2 \times 6 \quad 6 \times 2$

36 Using Numbers Again

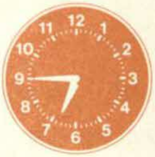
How many desks are there in your classroom? How many children sit at each desk? Write these things down. How could you find out, using these answers, how many children could be seated at the desks in your room? Write this down in words. Then write it as an equation.

37 Time

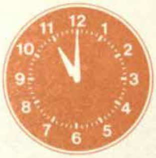
We say, "a quarter past four", but a shorter way of writing this is 4.15. The first number is the hour which has just gone. The second number is the number of minutes past that hour.



3.30 is 30 minutes after 3 o'clock, or "half past three".

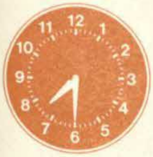


6.45 is 45 minutes after 6 o'clock, or "a quarter to seven".

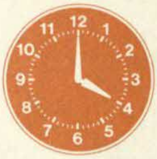


11.00 is no minutes after 11 o'clock, or just "eleven o'clock".

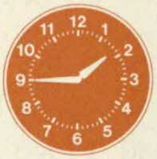
PRACTICE 68 Write these in the long way and in the short way.



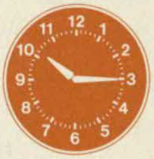
1)



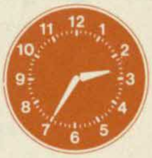
2)



3)



4)



5)

PRACTICE 69 Write these the long way.

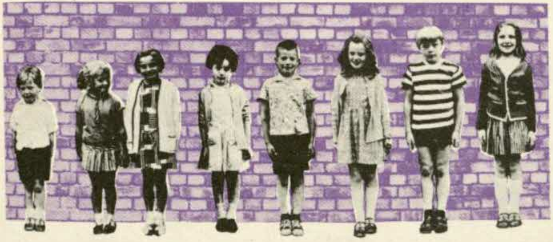
1) 1.30
2) 5.15
3) 9.00
4) 10.45
5) 3.00
6) 11.30
7) 2.45
8) 7.15
9) 4.25
10) 8.40
11) 6.05
12) 12.55
13) 3.10
14) 6.20
15) 2.50

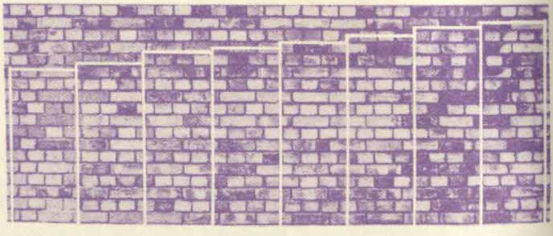
PRACTICE 70 Write these the short way.

1) half past nine
2) a quarter past two
3) a quarter to six
4) eight o'clock
5) half past twelve
6) a quarter past six
7) a quarter to nine
8) twelve o'clock
9) twenty past three
10) twenty-five to seven
11) five past eleven
12) ten to one
13) twenty-five past four
14) twenty to five
15) ten past ten

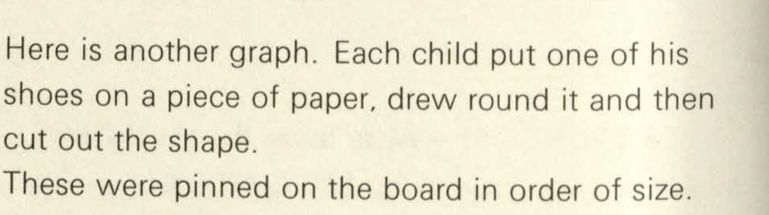
38 Picture Stories

We can tell a story in words, or we can tell it in numbers. There is another way of telling a story: in pictures. A picture-story in mathematics is called a **graph.**





The children in this class lined up in order of size, and teacher drew a line on the wall, level with each child's head. When the children moved, the marks stayed there. These marks were a graph. Do the same with a group of your friends.



Here is another graph. Each child put one of his shoes on a piece of paper, drew round it and then cut out the shape.

These were pinned on the board in order of size. Try this with your group. Notice that in both these graphs, there was a line at the bottom and another at the side. The line at the bottom is called the **horizontal axis,** and the one at the side is the **vertical axis.** In the first graph you saw, the ground was the horizontal axis and the end of the wall was the vertical axis.

Along the horizontal axis we count the number of children, or the number of shoes. On the vertical axis, we measure how tall the children are, or how long the shoe is.

Make more picture graphs by drawing round your friends' hands, by arranging books in order, and by using the box of lengths.

39

How the Shopkeeper Gives Change

If you go into a shop with a shilling, and buy something costing 8d, you must first change the shilling into 12 pennies, and then split the 12 pennies into two parts. The shopkeeper has 8d, and you have 4d, which we call the *change*. This is subtraction. We can write this as an equation: $1\text{s} - 8\text{d} = 4\text{d}$.

PRACTICE 71 How much change would you get from a shilling if you paid each of these amounts?

1) 4d 2) 7d 3) 3d 4) 6d
5) 9d 6) 11d 7) 2d 8) 5d
9) 10d 10) 3½d 11) 10½d 12) 5½d
13) 8½d 14) 2½d 15) 6½d 16) 9½d
17) 10½d 18) 4½d 19) 7½d 20) 11½d

When the shopkeeper is counting change, he starts with the cost of the article. Then he adds on coins till he reaches what you gave him. If you bought a toy costing 8d, and gave him a shilling, he would say, "The toy cost 8d. Here are some pennies. 9d, 10d, 11d, 1s."

You would then have 4d, which is the right change.

PRACTICE 72 Use pennies to find the change from a shilling in the shopkeeper's way, if you spend these amounts.

1) 9d 2) 7d 3) 10d 4) 4d 5) 8d
6) 5d 7) 1d 8) 3d 9) 6d 10) 2d

If the article cost $2\frac{1}{2}$d the shopkeeper might say,
"It cost $2\frac{1}{2}$d, 3d, 6d, 1 shilling."

You would then have $\frac{1}{2}\text{d} + 3\text{d} + 6\text{d}$, which is $9\frac{1}{2}$d, which is the right change.

PRACTICE 73 Use coins to find the change from a shilling after spending each of these amounts. Write out the coins you used for change each time.

1) $10\frac{1}{2}$d 2) $4\frac{1}{2}$d 3) $7\frac{1}{2}$d 4) $1\frac{1}{2}$d 5) $9\frac{1}{2}$d
6) $5\frac{1}{2}$d 7) $2\frac{1}{2}$d 8) $8\frac{1}{2}$d 9) $3\frac{1}{2}$d 10) $6\frac{1}{2}$d

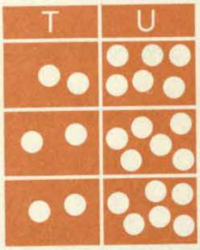
40 My Book of Length

Make another book, and call it, "My Book of Length". Measure as many things as you can, and write them in the book. Do not forget to estimate first, and write down your estimate before you measure.

What is the longest thing you have measured?
What is the shortest?
Which is the most useful unit for measuring something quite long, like the hall or the playground? Which is the most useful unit for something short, like a chair or a desk? Why?

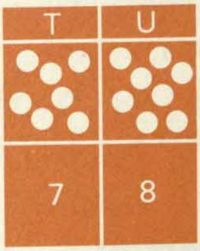
41 Multiplication: Tens and Units

Use your abacus to do this sum: 26 + 26 + 26. Do you remember the short way of writing this? We can write it 3 × 26 (3 times 26) or 26 × 3 (26 multiplied by 3).



We write this: 3 × 26 = 78, or 26 × 3 = 78, or

$$\begin{array}{r} 26 \\ \times\ \ 3 \\ \hline 78 \end{array}$$



PRACTICE 74 Use your abacus to do these.

1) 14 × 3 = x
2) 27 × 2 = y
3) 36 × 2 = z
4) 32 × 3 = a
5) 28 × 2 = b
6) 26 × 3 = c
7) 34 × 2 = p
8) 15 × 4 = q
9) 24 × 4 = r
10) 23 × 3 = s

PRACTICE 75 Do these without using your abacus.

1) 13 × 5 = a
2) 39 × 2 = b
3) 27 × 3 = c
4) 16 × 4 = d
5) 21 × 4 = x
6) 24 × 3 = y
7) 22 × 3 = z
8) 19 × 5 = p
9) 28 × 3 = q
10) 26 × 2 = r
11) 42 × 2 = s
12) 17 × 4 = a
13) 29 × 3 = b
14) 35 × 2 = c
15) 18 × 4 = d
16) 25 × 3 = x
17) 43 × 2 = y
18) 18 × 5 = z
19) 19 × 4 = v
20) 15 × 5 = w

PRACTICE 76

First write an equation about each of these stories, using addition. Then write the equation, using multiplication. Then turn the end of the story back into words.

1) Mother bought 4 packets of biscuits. Each packet held 24 biscuits. How many biscuits did Mother buy?

2) There were 6 shelves in the shop, and on each shelf stood 14 tins of soup. How many tins of soup were there?

3) For Pat's party, Mother bought 3 boxes of sweets. There were 18 sweets in each box. How many sweets were there?

4) In Classroom 4, there are 6 windows, and each window has 16 panes of glass. How many panes are there in the classroom?

5) For our school journey, we hired 3 coaches. If each coach could carry 32 children, how many could go?

6) The carpenter put up 6 shelves. For each shelf he used 15 screws. How many screws did he need?

7) Timothy bought 3 sixpenny stamps each week for 16 weeks. How many stamps did he buy altogether?

8) Each child in Class 5 needed 4 exercise books. There were 23 children in the class. How many exercise books were needed?

9) The baker had 15 bags of flour, each weighing 3 lb. How many pounds of flour did he have?

10) Our garden fence is 17 yards long. How many feet long is it?

PRACTICE 77 Write an interesting and sensible story about each of these sums.

1) 14 × 4 = 56
2) 19 × 3 = 57
3) 37 × 2 = 74
4) 17 × 5 = 85
5) 13 × 6 = 78

42

Time: A.M. and P.M.

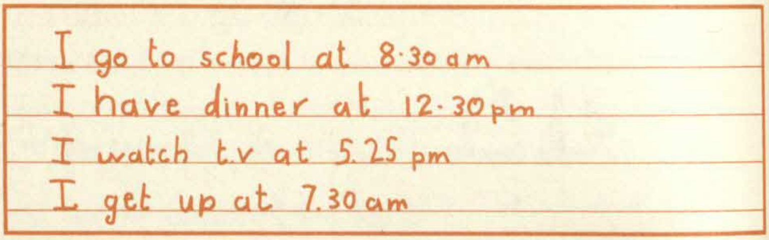
There are 24 hours in one day. But most of our clocks show only 12 hours. So each hour comes twice in one day. 12 o'clock in the middle of the day is called mid-day, or noon. The Latin word for mid-day is *meridiem*. So times in the morning are called *ante-meridiem*, which means *before noon*, and have the letters a.m. after them. Times in the afternoon or evening are called *post-meridiem*, which means *after noon*, and have the letters p.m. after them. 12 o'clock is either 12 noon or 12 midnight.

PRACTICE 78 Give sensible answers to these questions.

1) Did John go to bed at 8 a.m. or 8 p.m.?
2) Did school start at 9 a.m. or 9 p.m.?
3) Did Mary have tea at 5 a.m. or 5 p.m.?
4) Did Tom play football at 3 a.m. or 3 p.m.?
5) Did the sun rise at 6 a.m. or 6 p.m.?
6) Did Sandra go to the swimming pool at 2 a.m. or 2 p.m.?
7) Did Mother go shopping at 10 a.m. or 10 p.m.?
8) Did Linda see a rainbow at 11 a.m. or 11 p.m.?
9) Did David come home from school at 4 a.m. or 4 p.m.?
10) Did Peter have lunch at 12 noon or 12 midnight?

43 My Book of Time

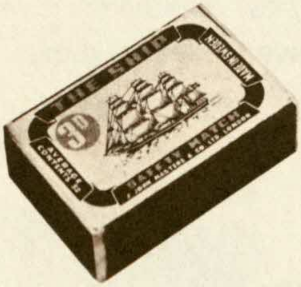
Make a book called, "My Book of Time". In it, put all the times you know when you do things.



I go to school at 8·30 am
I have dinner at 12·30 pm
I watch t.v at 5.25 pm
I get up at 7.30 am

What is the earliest time in your book? What is the latest time?

44 Brackets



Take 3 match-boxes and some counters. Put 2 counters into a matchbox.
Now put in 1 more counter.
We write this: $2 + 1$. Do this to all 3 match-boxes.
We write this: $3 \times (2 + 1)$. We put the $2 + 1$ into **brackets,** to show we did it first. How many counters are there? There are 3 in each box, and we have 3 boxes. We write this:

$$\begin{aligned} &3 \times (2 + 1) \\ &= 3 \times 3 \\ &= 9 \end{aligned}$$

Check this by counting the counters.
Put 2 counters in each match-box. Now put these counters together. We write this: 3×2. Now add 1 counter. We write this: $(3 \times 2) + 1$. We put the 3×2 in brackets, because we did this first. How many counters are there?
We write it:

$$\begin{aligned} &(3 \times 2) + 1 \\ &= 6 + 1 \\ &= 7 \end{aligned}$$

Check this by counting the counters.

Copy these into your book.

$3 \times (2+1)$
$= 3 \times 3$
$= 9$

$(3 \times 2) + 1$
$= 6 + 1$
$= 7$

They start with the same numbers, but they have different answers, because the brackets are in different places. We do the sum in brackets first.

PRACTICE 79

Set these out in the same way.

1) $(4 \times 2) + 7$ $4 \times (2+7)$
2) $(3 \times 5) + 2$ $3 \times (5+2)$
3) $5 \times (3+6)$ $(5 \times 3) + 6$
4) $3 + (7 \times 2)$ $(3+7) \times 2$
5) $(2+3) \times 3$ $2 + (3 \times 3)$

PRACTICE 80

Make up five more examples like this, and set them out in the same way.

PRACTICE 81

Set these out in the same way.

1) $(8-3) \times 2$ $8 - (3 \times 2)$
2) $3 \times (5-2)$ $(3 \times 5) - 2$
3) $(2 \times 4) - 1$ $2 \times (4-1)$
4) $7 - (2 \times 2)$ $(7-2) \times 2$
5) $(12-3) \times 3$ $12 - (3 \times 3)$

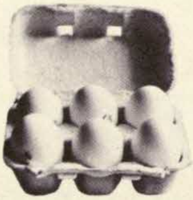
PRACTICE 82

Write an equation for each of these stories. Look to see what was done first, and put that in brackets. Then write the rest of the equation. Do not forget to turn the end of the story back into words.

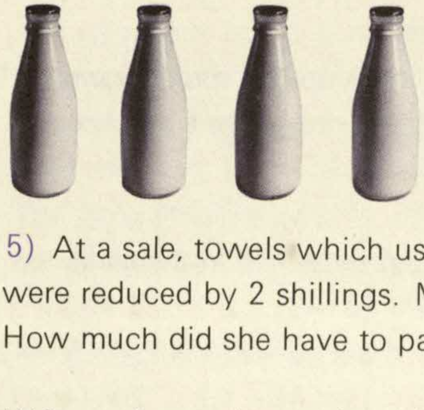
1) Father planted 4 rows of flowers. He put 6 flowers in each row. Then he planted 3 more flowers. How many flowers did he plant?

2) Ronald goes to school for 3 hours in the morning, and 2 hours in the afternoon. He goes to school for 5 days in each week. How many hours does he spend in school each week?

3) The grocer had some boxes of eggs. Each box had 6 eggs. He took 2 eggs out of each box. He then sold 3 boxes. How many eggs did he sell?



4) Mother took 3 pints of milk each week-day, and 4 pints on Sunday. How many pints did she take in a week?



5) At a sale, towels which usually cost 6 shillings were reduced by 2 shillings. Mother bought 4. How much did she have to pay?

PRACTICE 83 Write an interesting and sensible story about each of these.

1) (3 × 4) + 2
2) (4 + 2) × 3
3) 5 + (2 × 6)
4) 4 × (5 − 3)
5) (3 × 6) − 4

45

My Second Book of Time

How many years old are you? How many months of this year have gone? How many weeks are there in this term? How many days are there in this month? How many hours does morning school last? How many minutes does a mathematics lesson last?

Make "My Second Book of Time". In it put the answers to these questions, and as many other things as you can that are measured in years, months, weeks, days, hours or minutes.

46 More Brackets

Here are three ways of adding together 3 and 5 and 6.

$3+(5+6)$	$(3+5)+6$	$(3+6)+5$
$=3+11$	$=8+6$	$=9+5$
$=14$	$=14$	$=14$

Does it matter in which order we put them?
Does it matter which we add first?

PRACTICE 84 Do each of these in three different ways. Set out all your working.

1) $4+7+8$ 2) $2+4+5$ 3) $3+6+9$
4) $5+7+2$ 5) $3+8+6$

Here are three ways of multiplying together $2\times3\times4$.

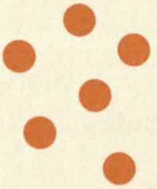
$(2\times3)\times4$	$2\times(3\times4)$	$(2\times4)\times3$
$=6\times4$	$=2\times12$	$=8\times3$
$=24$	$=24$	$=24$

What can you say about brackets when all the signs are + or all the signs are × ?

PRACTICE 85 Do each of these in three different ways. Set out all your working.

1) $2\times4\times6$ 2) $3\times4\times6$ 3) $2\times5\times4$
4) $3\times2\times7$ 5) $2\times3\times8$

47 Division



Put out 6 counters. How many sets can you make with 2 counters in each set? First, take 2 counters and put them on one side. Now take another 2, and put them on one side. Do this a third time. Now there is none left, and you have 3 sets. As you can see, this is a kind of subtraction. When you subtract the same number a lot of times, you are *dividing*. You have done a **division** sum.

We write the sum like this: $6 \div 2 = 3$.

We say, 6 divided by 2 equals 3.

PRACTICE 86 Use your counters to do these.

1) $8 \div 2 = x$ 2) $12 \div 3 = y$ 3) $10 \div 2 = z$

4) $6 \div 3 = p$ 5) $12 \div 6 = q$

When you divided the 6 counters into 3 sets of 2, you had done the sum, $6 \div 2 = 3$. But can you remember how we wrote 3 sets of 2? We put $3 \times 2 = 6$. Division is just another way of writing multiplication.

$3 \times 2 = 6$ $2 \times 3 = 6$ $6 \div 2 = 3$ $6 \div 3 = 2$

All these are only different ways of saying the same thing.

PRACTICE 87 Write each of these in three other ways.

1) $4 \times 3 = 12$ 2) $8 \div 4 = 2$ 3) $3 \times 6 = 18$

4) $15 \div 3 = 5$ 5) $4 \times 6 = 24$ 6) $12 \div 2 = 6$

7) $9 \times 2 = 18$ 8) $24 \div 3 = 8$ 9) $5 \times 9 = 45$

10) $42 \div 6 = 7$

Sometimes, instead of writing ÷ to mean "divided by", we put the numbers in place of the dots.

Instead of $6 \div 3 = 2$, we can write $\frac{6}{3} = 2$.

We can write $\frac{20}{5} = 4$, instead of $20 \div 5 = 4$.

Sometimes, the number we are dividing is put into a frame. $6 \div 3 = 2$ is written $\begin{array}{r}2\\3\overline{)6}\end{array}$ or $\begin{array}{r}3\underline{)\,6}\\2.\end{array}$

$\begin{array}{r}4,\\5\overline{)20}\end{array}$ or $\begin{array}{r}5\underline{)\,20}\\4,\end{array}$ is the same as $\frac{20}{5} = 4$.

PRACTICE 88

Write each of these in three other ways.

1) $27 \div 3 = 9$

2) $\frac{18}{6} = 3$

3) $\begin{array}{r}6\\4\overline{)24}\end{array}$

4) $\begin{array}{r}6\underline{)\,48}\\8\end{array}$

5) $\frac{14}{7} = 2$

6) $35 \div 5 = 7$

7) $\begin{array}{r}8\underline{)\,32}\\4\end{array}$

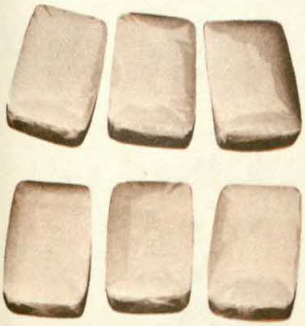
8) $\frac{54}{9} = 6$

9) $36 \div 9 = 4$

10) $\begin{array}{r}8\\8\overline{)64}\end{array}$

PRACTICE 89

Turn each story into numbers. It does not matter which way you write it. Turn the end of the story back into words.



1) Each desk will seat 2 children. How many desks are needed for 18 children?

2) The family use 6 tablets of soap each month. How long would 18 tablets of soap last?

3) There are 8 sections to a bar of chocolate. How many bars must I buy to give 32 children one section each?

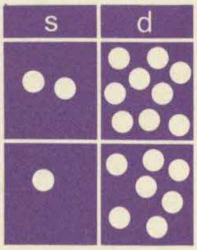
4) At camp, the children sleep 4 in each tent. We are taking 28 children to camp. How many tents will we need?

5) I buy hooks in packets of 6. If I need 24 hooks, how many packets must I buy?

48 A Money Abacus

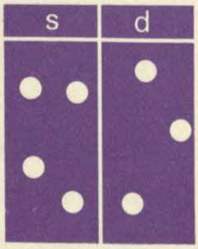
Make a money abacus like this. It is the same as a number abacus, except that the columns are for shillings and pence instead of tens and units. Remember there are 12 pennies in 1 shilling, and that there are 2 halfpennies in a penny. You can use counters on the abacus, but it would be better to use coins. What is the biggest number of pennies you can have in the pence column? Why?

Make these amounts of money on your abacus.



$$\begin{array}{rrr} & s & d \\ & 2 & 9 \\ + & 1 & 7 \\ \hline \end{array}$$

We need 3d to make the 9d up to a shilling. We take off the 12 pennies, leaving 4 pennies in the pence column. Instead, we put a shilling in the shillings column. This makes 4 shillings in the shillings column.



$$\begin{array}{rrr} & s & d \\ & 2 & 9 \\ + & 1 & 7 \\ \hline & 4 & 4 \end{array}$$

PRACTICE 90 Use your abacus to do these.

1) 3s 4d + 2s 9d
2) 1s 8d + 5s 7d
3) 7s 6d + 1s 8d
4) 4s 9d + 3s 5d
5) 2s 5d + 4s 11d
6) 3s $7\frac{1}{2}$d + 5s 10d

7) 3s 8d + 3s 4d 8) 6s 5½d + 2s 8d
9) 1s 7½d + 2s 6½d
10) 7s 4d + 10d
11) 2s 5d + 4s 6d + 1s 8d
12) 3s 7d + 1s 9d + 2s 10d
13) 2s 4½d + 5s 6d + 1s 9½d
14) 1s 7½d + 2s 9½d + 3s 8½d
15) 3s 5½d + 1s 10½d + 2s 9½d

PRACTICE 91 Do these without using your abacus.

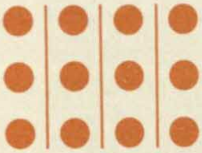
1) 5s 8d + 2s 10d 2) 6s 7d + 1s 9d
3) 4s 9d + 4s 11d 4) 6s 10d + 8d
5) 3s 7d + 1s 7d 6) 2s 6½d + 2s 9d
7) 10d + 5s 6d 8) 1s 7d + 4s 5d
9) 1s 8½d + 1s 9½d 10) 3s 5½d + 1s 10d
11) 2s 7½d + 1s 6d + 5s 4½d
12) 3s 8d + 2s 9d + 1s 10d
13) 3s 10½d + 1s 9d + 3s 5½d
14) 4s 7d + 1s 11d + 7d
15) 2s 6½d + 10½d + 5s 10½d

49 Watching Television

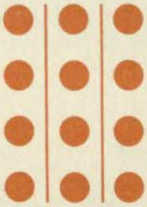
Look at the TV programmes in the newspaper, in "TV Times" or "Radio Times". Find out and write down all you can about the times of the programmes. For how many hours and minutes each day are programmes transmitted? How much of this time is news? For how many minutes is music transmitted? How much time is given to plays? Write down these answers. Write down the names and times of your favourite programmes, and how long each one lasts. How much time do you spend watching television each week? Think of some more questions to answer.

50

Two Kinds of Division



Put out 12 counters. How many sets with 3 counters can you make? You know that we write this: 12 ÷ 3 = 4.



Put the 12 counters together again. Now make 3 sets, with the same number of counters in each. How many counters are in each set? We can write this: 12 ÷ 3 = 4.

So you see that 12 ÷ 3 = 4 can mean two different things.

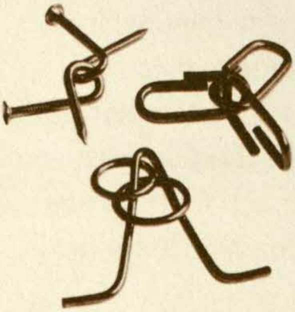
PRACTICE 92 Use your counters to find two meanings for each of these. Draw pictures showing what you do.

1) 8 ÷ 2 = 4
2) 15 ÷ 3 = 5
3) 12 ÷ 4 = 3
4) 16 ÷ 8 = 2
5) 18 ÷ 3 = 6
6) 20 ÷ 5 = 4
7) 12 ÷ 2 = 6
8) 24 ÷ 6 = 4
9) 18 ÷ 9 = 2
10) 24 ÷ 8 = 3

PRACTICE 93 Turn each story into numbers. Do not forget to turn the end back into words.

1) We have 6 cars to carry 24 children. How many children should go in each car?

2) At the party, there were 18 chocolates left over, so we shared them between the 6 guests. How many did each guest have?



3) There are 72 children to have dinner at school. We have 9 tables. How many children must sit at each table?

4) Mother gave the 4 children a shilling for helping in the garden. How many pennies should each child have?

5) Tom had 3 puzzles to do in half-an-hour. How many minutes should he spend on each puzzle?

51 The Calendar

CALENDAR

JANUARY					
S	1	8	15	22	29
M	2	9	16	23	30
T	3	10	17	24	31
W	4	11	18	25	
T	5	12	19	26	
F	6	13	20	27	
S	7	14	21	28	

FEBRUARY					
S		5	12	19	26
M		6	13	20	27
T		7	14	21	28
W	1	8	15	22	
T	2	9	16	23	
F	3	10	17	24	
S	4	11	18	25	

MARCH					
S		5	12	19	26
M		6	13	20	27
T		7	14	21	28
W	1	8	15	22	29
T	2	9	16	23	30
F	3	10	17	24	31
S	4	11	18	25	

APRIL						
S		2	9	16	23	30
M		3	10	17	24	
T		4	11	18	25	
W		5	12	19	26	
T		6	13	20	27	
F		7	14	21	28	
S	1	8	15	22	29	

MAY					
S		7	14	21	28
M	1	8	15	22	29
T	2	9	16	23	30
W	3	10	17	24	31
T	4	11	18	25	
F	5	12	19	26	
S	6	13	20	27	

JUNE					
S		4	11	18	25
M		5	12	19	26
T		6	13	20	27
W		7	14	21	28
T	1	8	15	22	29
F	2	9	16	23	30
S	3	10	17	24	

JULY						
S		2	9	16	23	30
M		3	10	17	24	31
T		4	11	18	25	
W		5	12	19	26	
T		6	13	20	27	
F		7	14	21	28	
S	1	8	15	22	29	

AUGUST					
S		6	13	20	27
M		7	14	21	28
T	1	8	15	22	29
W	2	9	16	23	30
T	3	10	17	24	31
F	4	11	18	25	
S	5	12	19	26	

SEPTEMBER					
S		3	10	17	24
M		4	11	18	25
T		5	12	19	26
W		6	13	20	27
T		7	14	21	28
F	1	8	15	22	29
S	2	9	16	23	30

OCTOBER					
S	1	8	15	22	29
M	2	9	16	23	30
T	3	10	17	24	31
W	4	11	18	25	
T	5	12	19	26	
F	6	13	20	27	
S	7	14	21	28	

NOVEMBER					
S		5	12	19	26
M		6	13	20	27
T		7	14	21	28
W	1	8	15	22	29
T	2	9	16	23	30
F	3	10	17	24	
S	4	11	18	25	

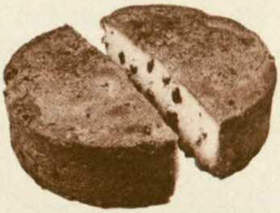
DECEMBER						
S		3	10	17	24	31
M		4	11	18	25	
T		5	12	19	26	
W		6	13	20	27	
T		7	14	21	28	
F	1	8	15	22	29	
S	2	9	16	23	30	

Find a calendar for this year. Write a list of the months. By each one, put the number of days in that month. By each month, write the name of the first day of that month. Is there any day which does not begin a month? Which days begin two months? Which days begin three months?

Write a list of the days of the week. Which is the first day? Opposite each day, write how many times that day comes in this year. Now count the number of weeks in the year. What do you notice? Why?

Try to think of some more counting to do with the calendar.

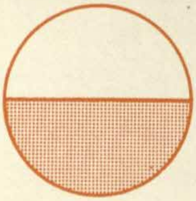
52 Halves, Quarters and Thirds



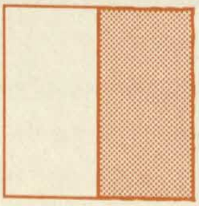
When you cut a cake into two **equal** parts (this means two parts the same size), you divide it into two halves. Each part is a **fraction** of the cake. This is division; one whole one divided into two equal parts. You know we can write a division sum with one number over the other. So we write this division sum $\frac{1}{2}$. We call this fraction "one half", but it means one thing divided into two equal parts.

Here are some ways of dividing shapes into halves. The two halves must be the same size, but they do not need to be the same shape.

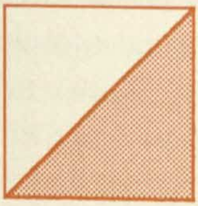
a



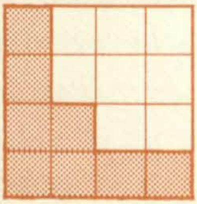
b



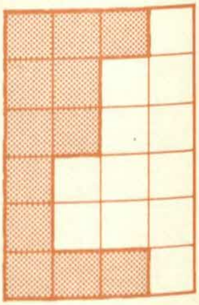
c



d



e

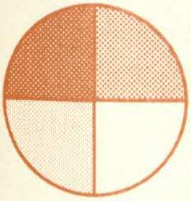


PRACTICE 94 Copy these shapes into your book. Look at d. How many squares are there in each half? Do the same with e. Now make up some more of your own. Remember that the two halves must be of equal size.

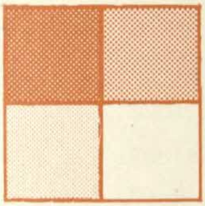
If you divide the cake into four equal parts, we call each part "one quarter". Again, we write the fraction like a division sum: $\frac{1}{4}$.

Here are some ways of dividing shapes into quarters.

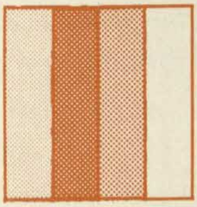
a



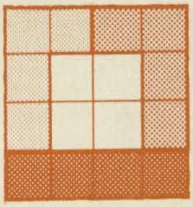
b



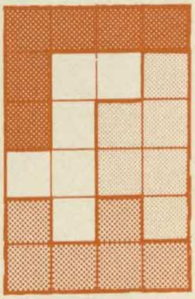
c



d

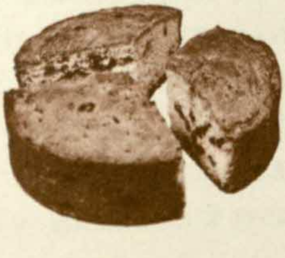


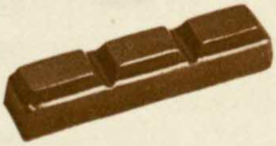
e



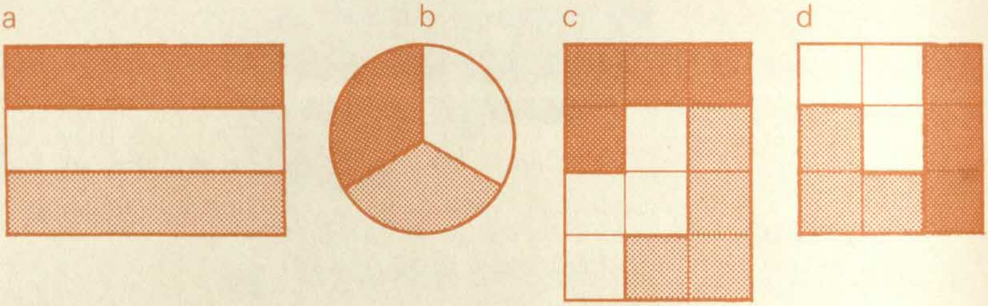
PRACTICE 95 Copy these into your book. Look at d. How many squares are there in each quarter? What does this tell you to remember? Do the same with e. Now make up some more of your own.

When anything is divided into three equal parts, each part is called one third, and we write it $\frac{1}{3}$. Here are some thirds.





Here are some ways of dividing shapes into thirds.



PRACTICE 96 Copy these into your book. In c and d, count how many squares there are in each third. What must you remember?

53 Capacity

Take the box of bottles. Look at the smallest bottle. Estimate how many of the smallest bottle would be needed to fill each of the other bottles. Write down your estimates. Now find out, by using the smallest bottle to fill the others. Write down what you have found out. How good were your estimates?

Find out which bottle is the pint bottle. Now write down the **capacity** of the other bottles in pints.

Fill the pint bottle, and then pour the water into an empty bucket. Do this 8 times altogether. You have a gallon of water in the bucket. 8 pints = 1 gallon. Look at it, then pour it away. See if you can put a gallon of water straight into the bucket, without measuring. How can you tell if you are right?

Use the bottles, or a graduated measure, to find the capacity of as many containers as you can. First estimate what the capacity will be, then measure it.

54 Coins and Notes

ten-shilling
note 10s

one-pound
note £1

florin 2s

Here are some more coins, and some notes. The pound note is worth 20 shillings. The Latin word for pound is *libra*, and we use an old-fashioned capital L to stand for "pound". The sign goes *in front of* the number. Five pounds is written: £5.

Remember:

20 shillings are worth £1
10 florins are worth £1
8 half-crowns are worth £1
2 ten-shilling notes are worth £1

half-crown 2s 6d

Remember these as well:

2 half-crowns are worth 5s
3 half-crowns are worth 7s 6d
4 half-crowns are worth 10s
5 half-crowns are worth 12s 6d
6 half-crowns are worth 15s
7 half-crowns are worth 17s 6d

PRACTICE 97 If Father has these coins and notes in his pocket, how much has he?

1) 2 florins
2) 2 half-crowns
3) 3 florins and 1 half-crown
4) 2 half-crowns and 1 florin
5) A ten-shilling note, 1 half-crown and 1 florin

6) 3 half-crowns and a ten-shilling note
7) A pound note, 5 half-crowns and 2 florins
8) 3 pound notes, 4 florins and 2 half-crowns
9) 2 pound notes, a ten-shilling note and 6 half-crowns
10) A pound-note, 2 ten-shilling notes, 4 half-crowns and 5 florins.

PRACTICE 98 Mother had in her purse a pound note, a ten-shilling note, 3 half-crowns and 4 florins. How could she pay these amounts?

1) 9s
2) 8s 6d
3) 9s 6d
4) 12s 6d
5) 16s
6) £1 15s
7) 16s 6d
8) 18s 6d
9) £2 3s
10) £1 5s 6d

55

Giving Change

Do you remember how the shopkeeper gives change? He starts with what you have to pay, and adds on coins till he reaches what you gave him. If you gave him a ten-shilling note for something costing 3s, he might say, "3 shillings, and a florin makes 5 shillings, and half-a-crown is 7s 6d, and another half-crown is 10 shillings." You would then have a florin and 2 half-crowns, which is 7 shillings, which is the right change.

PRACTICE 99 Use the shopkeeper's way of giving change to find what change you should have from a pound note after paying each of these:

1) 13s 6d
2) 13s
3) 11s 6d
4) 11s
5) 10s 6d
6) 9s 6d
7) 9s
8) 8s 6d
9) 7s
10) 6s 6d

56

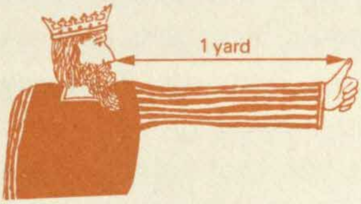
The Story of Measuring

Thousands of years ago, people did all their measuring with parts of themselves, or with ordinary things which anyone could find. You have already used your foot, your span, your pace, your cubit, and your fathom or stature. People also used their fingers, thumbs, hands and arms. Sometimes they used grains of corn, stones or any other thing which was handy.

But people began to find that measuring things in this way led to trouble. One man's foot is often bigger than another man's. A short man would pace out a wall, and say it was 50 paces. A tall man would make the wall only 40 paces. A woman buying cloth from a short man would get less than if she bought it from a tall man.

So the measures had to be fixed. But we often use the old names. The height of a horse is still measured in *hands*. But now a hand is always 4 inches. We still use feet for measuring. But now a foot is always 12 inches. The name inch comes from a Latin word, *uncia*, which means "a twelfth", because there are 12 inches in a foot. The inch used to be the thickness of a man's thumb.

We also measure in yards. A yard was once the length of a man's belt. But King Henry 1 ordered that a yard should always be the distance between the King's nose and his thumb when he stretched out his arm. Now, of course, a yard is always 3 feet, or 36 inches.



The Latin word for pound is *libra*, and so we use the letters lb. to stand for a pound weight. (What sign do we use for a pound in money? Why?) The Romans had 12 ounces in their pound. Do you remember the Latin word for twelfth? The word ounce also comes from *uncia*. But King Edward I ordered that there should be 16 ounces in a pound, and so there are today.

The Romans did a lot of their counting in 12's. They had 12 ounces in a pound, 12 inches in a foot, 12 pennies in a shilling, 12 months in a year, 12 hours in a half-day, and 12 things in a dozen. More than 300 years ago, Oliver Cromwell ordered bakers to make their bread rolls smaller, to save flour. To make up for this, the bakers put an extra roll in every dozen. So a "baker's dozen" is not 12, but 13.

The word pint comes from a Latin word meaning a mark, because the bowl or jar had to be filled to the mark. There are 8 pints in a gallon. The name gallon comes from an old French word meaning a jar.

57

Bills

loaf 1s 2d
small loaf 8d
eggs, ½ dozen 2s 9d
¼ lb tea 1s 11d
fruit cake 2s 8d
jam roll 1s 10d
salt, packet 7d

1 lb sugar 10½d
2 lb sugar 1s 9d
cereal, packet 1s 9½d
margarine, ½ lb 1s 4½d
butter, ½ lb 1s 8½d
cocoa, ½ lb tin 2s 5d
tin of fruit 3s 6d

Mother went to the grocer's and bought 2 lb sugar, ½ lb margarine and ½ dozen eggs. The grocer made out a **bill,** saying what she bought and how much it cost, like this:

	s	d
2 lb sugar	1	9
½ lb margarine	1	4½
½ dozen eggs	2	9
	5	10½

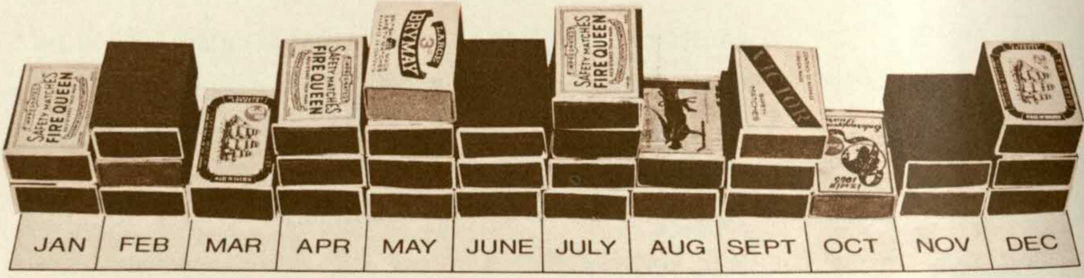
Mother gave the grocer a ten-shilling note, and he gave her change: ½d + 1d + 2s + 2s. He gave her 4s 1½d change.

PRACTICE 100 Make out bills and give change from a ten-shilling note for these goods.

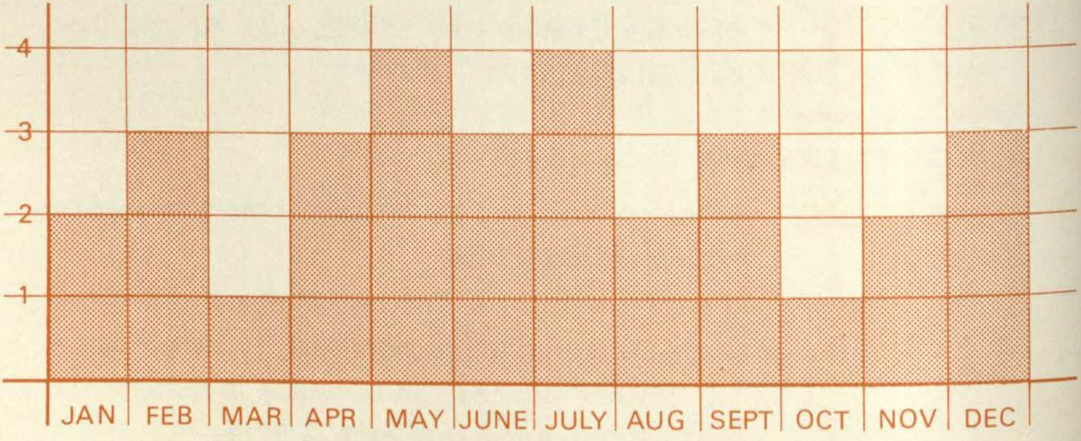
1) tin of fruit, ¼ lb tea, packet of salt
2) ½ lb tin of cocoa, small loaf, ½ dozen eggs
3) packet of cereal, tin of fruit, ½ lb butter
4) ½ dozen eggs, fruit cake, ¼ lb tea
5) large loaf, 1 lb sugar, jam roll
6) fruit cake, packet of cereal, 2 lb sugar
7) large loaf, ½ lb butter, jam roll
8) ½ lb margarine, 1 lb sugar, small loaf
9) packet of salt, ½ lb tin of cocoa, ½ lb butter
10) 2 lb sugar, ½ lb margarine, tin of fruit, small loaf

58 More Picture Stories

Teacher collected enough match-boxes for each child in the class to have one. Then all the children born in January came out and put their match-boxes in a pile. Then all those born in February did the same. Then those born in the other months came out in turn. In this way, they made a kind of graph.



Then the children copied the graph on to squared paper, using one square to stand for each match-box.

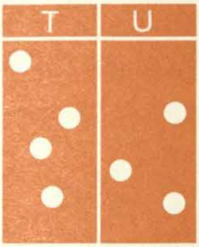


This kind of graph is often called a **block graph.** Do the same with your class, and copy the graph into your book.

In the same way, make graphs showing your class's bed-times, pocket money, and anything else you can think of.

59

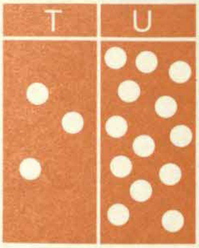
More Subtraction



On your abacus, make the number 43. We want to subtract 17. That means, we want to split the 43 into two sets, so that one is 17. We put it down like this:

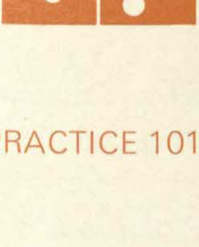
$$\begin{array}{rr} \text{T} & \text{U} \\ 4 & 3 \\ -1 & 7 \\ \hline \end{array}$$

First, we look at the units. But there are not enough units to split into two sets with one of them being 7. Remember that each of the counters in the 10's column is really the same as 10 units.



So we take off one of the counters from the 10's column, and instead put 10 counters in the units column.

How many counters are there in the units column now?



Now, split the counters into two sets.

We write the sum down like this:

$$\begin{array}{rr} \text{T} & \text{U} \\ 4 & 3 \\ -1 & 7 \\ \hline 2 & 6 \end{array}$$

PRACTICE 101 Do these, using your abacus.

1) $72 - 49 = x$ 2) $42 - 18 = y$ 3) $85 - 28 = z$

4) $63 - 37 = p$ 5) $52 - 15 = q$ 6) $90 - 43 = r$

7) $36 - 14 = a$ 8) $70 - 39 = b$ 9) $82 - 37 = c$

10) $61 - 48 = d$

PRACTICE 102 Do these, without using your abacus.

1) $93 - 15 = p$ 2) $46 - 29 = q$

3) $71 - 56 = r$ 4) $87 - 59 = s$

5) $50 - 25 = t$
6) $75 - 16 = x$
7) $81 - 45 = y$
8) $60 - 14 = z$
9) $74 - 29 = a$
10) $93 - 36 = b$
11) $54 - 38 = c$
12) $57 - 24 = d$
13) $41 - 23 = y$
14) $85 - 37 = r$
15) $72 - 33 = c$
16) $68 - 45 = q$
17) $74 - 66 = z$
18) $54 - 24 = a$
19) $43 - 8 = p$
20) $82 - 46 = x$

PRACTICE 103

Tell each story in numbers. Do not forget to turn the end of the story back into words.

1) There are 36 exercise books in a new packet. Teacher gave out books to 28 children. How many were left in the packet?

2) 27 passengers travelled in the 42-seater coach. How many empty seats were there?

3) There are 25 girls in a class of 41 children. How many boys are there?

4) The grocer sold 46 tins of meat from a case holding 80. How many were left in the case?

5) Dick's exercise book had 24 pages. He has filled 17. How many pages are left?

6) There were 33 passengers on the bus. After it stopped to let some passengers off, there were 18. How many got off the bus?

7) We went on holiday in the car to Yarmouth, 83 miles away. At mid-day, we had gone 35 miles. How much further had we to go?

8) The time now is 10.45. What time was it 26 minutes ago?

9) In their game, Trevor scored 75 points out of 100, but Bobby had 58. Who won? By how many points did he win?

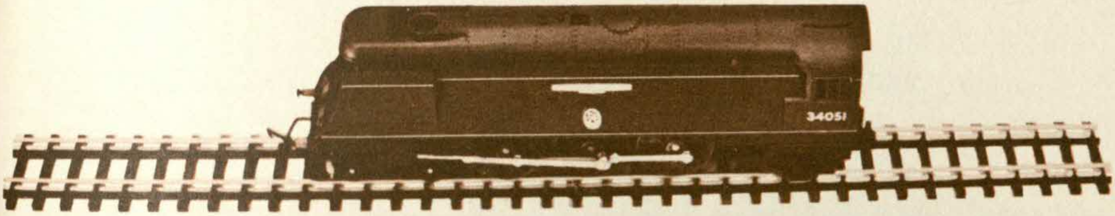
10) Father is 36. Grandfather is 63. How old was Grandfather when Father was born?

PRACTICE 104 Write an interesting and sensible story about each of these.

1) $26 - 18 = 8$ 2) $43 - 27 = 16$
3) $35 - 19 = 16$ 4) $80 - 32 = 48$
5) $51 - 24 = 27$

60

Parallel Lines



Look at a model railway train, and see how the wheels fit on to the rails. Why do they always fit, even when the train moves to another part of the line? Why does the line have sleepers?

Lines that are always the same distance apart are called **parallel** lines. The sides of a door are parallel. See how many pairs of parallel lines you can find, and write them down. Can you find any sets with more than two parallel lines? Can you find any parallel lines that are not straight?

61

Multiplication: Shillings and Pence

You know how to do this sum:

s	d
2	7
2	7
2	7
2	7
10	4

Can you remember a quick way of writing this? If not, look back to PRACTICE 53.

PRACTICE 105

Do these sums in two ways.

1) 1s 5d + 1s 5d + 1s 5d + 1s 5d + 1s 5d
2) 2s 6d + 2s 6d + 2s 6d
3) 1s 8d + 1s 8d + 1s 8d + 1s 8d
4) 4s 9½d + 4s 9½d
5) 3s 7½d + 3s 7½d + 3s 7½d

PRACTICE 106

Do these sums in the easiest way.

1) 2s 9d × 3
2) 1s 4d × 8
3) 4s 6d × 2
4) 1s 8d × 5
5) 2 × 3s 9d
6) 4 × 2s 5d
7) 3 × 3s 6d
8) 6 × 1s 7d
9) 2s 4d × 4
10) 5 × 1s 11d
11) 2 × 4s 10d
12) 1s 9d × 6
13) 4 × 1s 10½d
14) 3 × 2s 11½d
15) 3s 7½d × 2
16) 2s 5½d × 3
17) 4s 8½d × 2
18) 5 × 1s 11½d
19) 2s 3½d × 7
20) 4 × 3s 9½d

PRACTICE 107

How much would Mother pay for these things?

1) 2 pairs of gloves at 4s 8d. a pair.
2) 6 handkerchiefs at 1s 5d each.
3) 3 knitting patterns at 1s 9d each.
4) 6 ounces of wool at 2s 8d an ounce.
5) 3 pairs of knitting needles at 1s 8½d a pair.
6) 3 pairs of socks at 4s 11d a pair.
7) 2 tee-shirts at 8s 11½d each.
8) 3 zip-fasteners at 2s 10½d each.
9) 4 yards of ribbon at 1s 9½d a yard.
10) 5 cards of buttons at 1s 2½d a card.

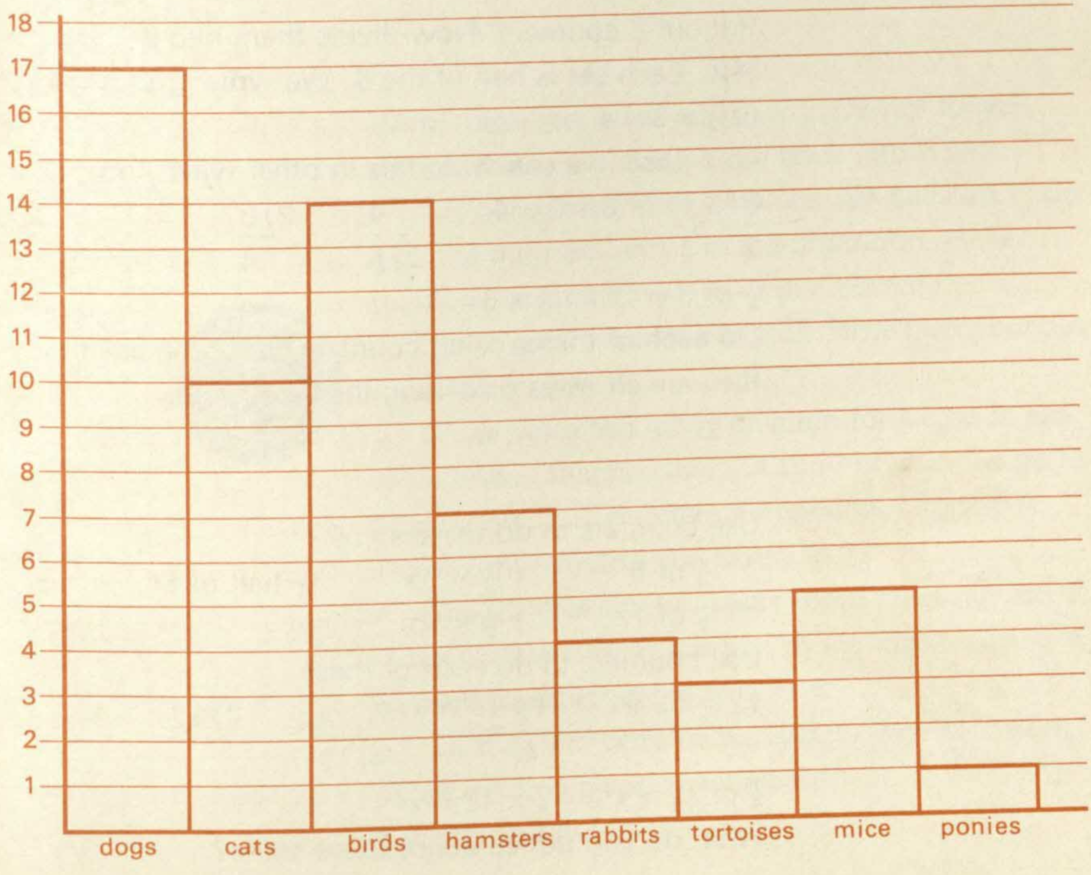
62 Making Graphs

Find out which pets the children in your class have, and how many of each there are. Make a table showing what you have found, like this:

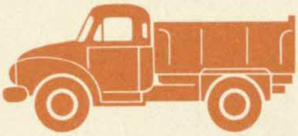
dogs	17
cats	10
birds	14
hamsters	7

Draw a **block graph** showing this. Remember that we put the things we have chosen along the horizontal axis, and what we have found out goes up the vertical axis. Here, we chose to count pets, and we found out how many there were. Take care how you put the numbers at the side.

Your graph should look something like this.



Count the vehicles and people that pass the school in a quarter of an hour. Make a table showing what you have found, like this:



cars	32	tankers	3
lorries	26	motor cycles	4
large vans	15	bicycles	14
small vans	21	pedestrians	19

Draw a graph showing what you have found. Find some more things you can count and make a graph of. Make a table first, showing what you have found. Then draw the graph.

63

Fractions

Put out 8 counters. Now divide them into 2 equal sets. Each set is half of the 8. We write: $\frac{1}{2}$ of $8 = 4$, or $\frac{1}{2} \times 8 = 4$.

Of course, we can write this in other ways, too.

$\frac{8}{2} = 4$ $\quad 8 \div 2 = 4$ $\quad \begin{array}{r} 4 \\ 2\overline{)8} \end{array}$ $\quad \begin{array}{r} 2\underline{)8} \\ 4 \end{array}$

$\frac{1}{2}$ of $8 = 4$ $\quad \frac{1}{2} \times 8 = 4$

Do each of these, using counters. You can see that they are all ways of writing the same sum.

PRACTICE 108 Use counters to do these sums.

1) $\frac{1}{2}$ of 6 2) $\frac{1}{2} \times 10$ 3) half of 14

4) $\frac{1}{2}$ of 12 5) $\frac{1}{2} \times 16$

Use counters to do each of these.

$12 \div 4 = x$ $\quad \frac{12}{4} = x$ $\quad \begin{array}{r} x \\ 4\overline{)12} \end{array}$ $\quad \begin{array}{r} 4\underline{)12} \\ x \end{array}$

$\frac{1}{4}$ of $12 = x$ $\quad \frac{1}{4} \times 12 = x$

What do you notice about these sums?

PRACTICE 109

Use counters to do these.

1) $\frac{1}{4}$ of 20
2) $\frac{1}{4} \times 8$
3) quarter of 28
4) $\frac{1}{4} \times 16$
5) $\frac{1}{4}$ of 24

How can you show that all these are the same sum?

$18 \div 3 = a$ $\quad \frac{18}{3} = a \quad$ $\begin{array}{r} a \\ 3\overline{)18} \end{array}$ $\quad \begin{array}{r} 3\underline{)18} \\ a \end{array}$

$\frac{1}{3}$ of $18 = a$ $\quad \frac{1}{3} \times 18 = a$

PRACTICE 110

Do these using counters.

1) $\frac{1}{3}$ of 15
2) $\frac{1}{3} \times 6$
3) third of 9
4) $\frac{1}{3} \times 21$
5) $\frac{1}{3}$ of 12)

PRACTICE 111

Do these without counters.

1) $\frac{1}{2}$ of 18
2) $\frac{1}{4} \times 36$
3) $\frac{1}{3}$ of 24
4) $\frac{1}{2} \times 24$
5) $\frac{1}{4}$ of 32
6) $\frac{1}{3} \times 27$
7) $\frac{1}{2}$ of 20
8) $\frac{1}{4} \times 40$
9) $\frac{1}{3}$ of 30
10) $\frac{1}{4} \times 4$

PRACTICE 112

Write these stories as equations. Do not forget to turn the end of each story back into words.

1) On our cycle trip of 24 miles, we planned to do $\frac{1}{2}$ in the morning and $\frac{1}{2}$ in the afternoon. How many miles should we go in the morning?

2) There are 16 ounces in 1 lb. How many ounces are there in $\frac{1}{4}$ lb?

3) There were too many children for Nurse to see all at once. Teacher said, "A third of you can go to Nurse now." There were 24 children altogether. How many went to see Nurse first?

4) The 20 desks in our class-room are arranged in 4 equal rows. What fraction of the desks should go in each row? How many is this?

5) Mother had only 18 biscuits to last for 3 days. What fraction should we eat each day? How many biscuits is this?

PRACTICE 113 Write an interesting and sensible story about each of these.

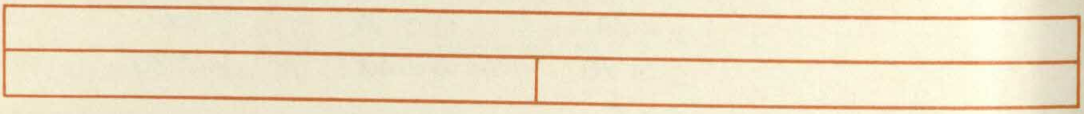
1) $\frac{1}{2}$ of 18 2) $\frac{1}{4}$ of 28 3) $\frac{1}{3}$ of 15

4) $\frac{1}{4} \times 12$ 5) $\frac{1}{3} \times 21$

64

Using the Fraction Strips

Take the set of fraction strips. Find two equal strips which together make the same length as the longest strip. Lay the two strips by the side of the long one. What fraction of the long one is each of the others?



Find 3 equal strips which together make the same length as the longest strip. Lay them by the side of the others. What fraction of the long one is each of these 3 strips?

Find 4 equal strips which make the same length as the longest strip. Lay them by the side of the others. What fraction of the long one is each of these 4? Use the strips to find how many quarters there are in a half. Write this down as an equation.

Find 6 equal strips which make the same length as the longest strip. How many parts must you divide the long one into, to make the strips you have just taken? Write this division sum by putting one figure over another. What fraction is each small strip? Use this to find how many sixths there are in a half, and how many there are in a third. Write these down as equations.

65 Revision

PRACTICE 114 Make an equation for each of these stories, and then turn the end back into words.

1) Farmer Giles had 8 pigs, but he sold 3 of them. How many did he have then?

2) Richard had 5 model cars. On his birthday he was given 4 more. How many did he have then?

3) Mother bought a card of buttons. The buttons were in 4 rows. In each row there were 3 buttons. How many were on the card?

4) Geoffrey is 9 years old, and Margaret is 7. Who is older? What is the difference in their ages?

5) A grocer has 48 eggs. He puts 6 eggs into each box. How many boxes will he need?

6) There were 45 books in the class library. The headmaster bought 16 more. How many books did the library have then?

7) There were 28 children at the party. If there were 4 tables, how many children should sit at each table?

8) Each coal lorry carries 24 sacks of coal. If 3 lorries left the yard, how many sacks of coal did they take?

9) The gardener picked 36 daffodils, and put them into 4 equal bunches. What fraction of the daffodils went into each bunch? How many flowers were in each bunch?

10) A piece of rope, 15 feet long, was cut from a coil 42 feet long. How much rope was left?

11) The inspector on the train counted 26 passengers in the first coach, 17 in the second and 28 in the last. How many passengers were on the train?

12) Mother bought 3 packets of biscuits. If there

are 18 biscuits in each packet, how many biscuits did Mother buy altogether?

13) The paper-boy set out with 60 newspapers. When he returned he had 14. How many had he delivered?

14) The 29 children in Class 4 were given 3 exercise books each. How many books were needed?

15) Teacher has a roll of ribbon 27 feet long. If each girl needs 3 feet of ribbon, how many girls could be supplied?

16) There are 35 cars in one car park, and 26 in the other. How many cars are there all together?

17) Our team scored 47 runs in the cricket match. The other team scored 53. Who won? By how many runs did they win?

18) Mother made 32 cakes for the party. She put them on 4 plates. How many should she put on each plate?

19) There are 13 weeks in this term. The school opens for 5 days each week. For how many days is the school open this term?

20) 42 children were watching the netball match. If 6 children could sit on one bench, how many benches did we need?

PRACTICE 115 Pick out the most sensible answer for each of these.

1) How many people were in the car?

4,000 400 40 4

2) How many crayons are in a new packet?

1,000 100 10 1

3) How many matches are in a new box?

5,000 500 50 5

4) How many children were in the school?

2,000 200 20 2

5) How long is a pencil?

1 yard 2 feet 6 inches 1 inch

6) How long is a car?

20 yards 9 yards 14 feet 4 feet

7) How high is a house?

25 yards 25 feet 10 feet 25 inches

8) How high is a table?

3 yards 4½ feet 2½ feet 1 foot

9) How wide is a street?

200 yards 20 yards 12 feet 27 inches

10) How heavy is a pint bottle of milk?

20 lb 10 lb 2½ lb ½ lb

11) How heavy is a chair?

50 lb 10 lb 2 lb 8 oz

12) How heavy is a letter?

5 lb 1 lb 8 oz ½ oz

13) How heavy is a hammer?

50 lb 10 lb 2 lb 8 oz

14) How much would a cup hold?

10 gallons 2 gallons 4 pints ½ pint

15) How much would a kettle hold?

10 gallons 2 gallons 4 pints ½ pint

16) How much would a bucket hold?

10 gallons 2 gallons 4 pints ½ pint

17) How long does a television programme last?

12 hours 3 hours ½ hour 5 minutes

18) How long does a football match last?

3 days 5 hours 1 hour 10 minutes

19) How long does a school term last?
2 years 9 months 14 weeks 4 weeks

20) How long would a man take to run a mile?
5 days 5 hours 5 minutes 5 seconds

PRACTICE 116

Make these sums of money, using the smallest number of coins you can.

1) 2s 11d 2) 3s 10d 3) 4s 4d
4) 6s 9d 5) 9s 8d

PRACTICE 117

ink, bottle	10½d
fountain pen	4s 4d
ball-point pen	9d
pencil	7½d
rubber	3½d
ruler	10d
large notebook	8½d
small notebook	4½d
writing pad	1s 5½d
note-paper	1s 8d
envelopes, packet	1s 1½d
crayons, packet	2s 6d
crayons, each	3d

Make out bills for these, and give change from a pound note.

1) A bottle of ink, a fountain pen and 2 large notebooks.

2) Note-paper, a packet of envelopes and 2 ball-point pens.

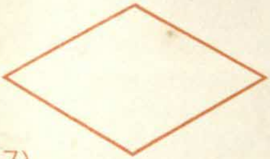
3) 3 writing pads, a ruler, 3 pencils and 5 crayons.

4) 3 small notebooks, 2 packets of crayons, 2 pencils and a rubber.

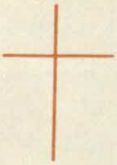
5) Note-paper, a packet of envelopes, 3 fountain pens and a bottle of ink.

PRACTICE 118

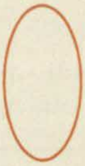
1)



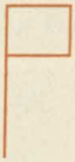
2)



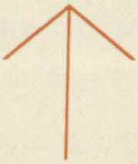
3)



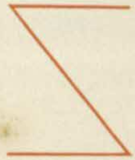
4)



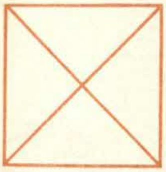
5)



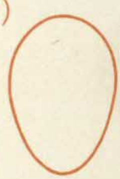
6)



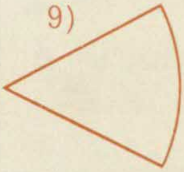
7)



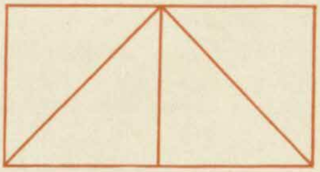
8)



9)



10)



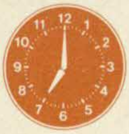
Make a table like this. Look at the shapes and fill in the table. The first answer is put in for you.

	1)	2)	3)	4)	5)	6)	7)	8)	9)	10)
Number of straight lines	4									
Number of right-angles	0									
Is the shape symmetrical?	yes									
Number of axes of symmetry	2									

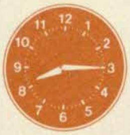
PRACTICE 119

Write these times in the long way. Then write them the short way, saying whether they are a.m. or p.m.

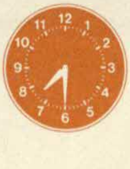
1) Michael got up at

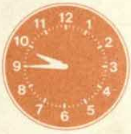


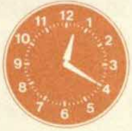
2) He went to bed at

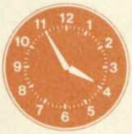


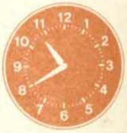
3) The school concert started at

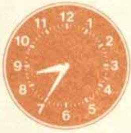


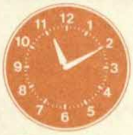
4) We set off for our picnic at 

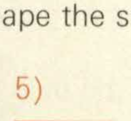
5) We had our lunch at 

6) We had tea at 

7) Peter went to the cinema on Saturday at 

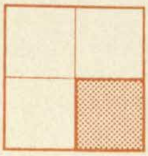
8) Bobby caught the bus to school at 

9) Celia went to the library at 

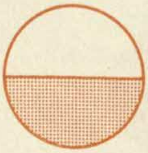
10) Jean went shopping at 

PRACTICE 120 Say what fraction of each shape the shaded part is.

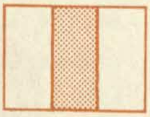
1)



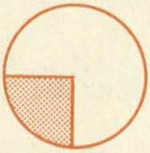
2)



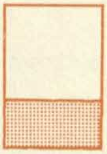
3)



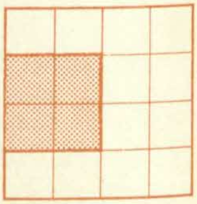
4)



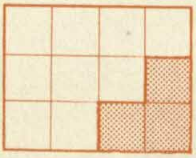
5)



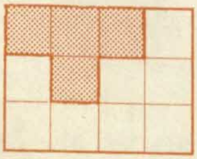
6)



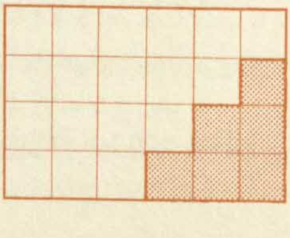
7)



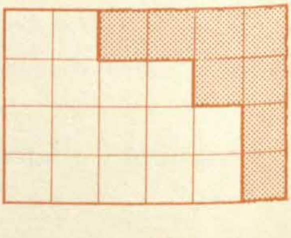
8)



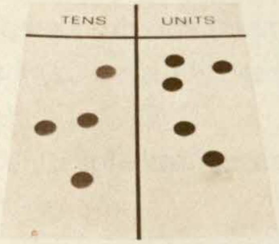
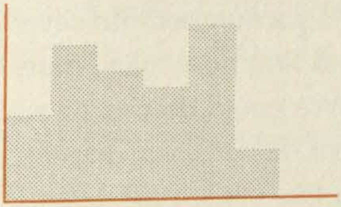
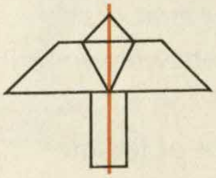
9)

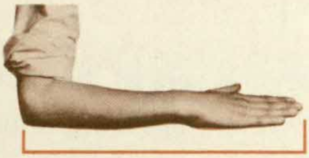
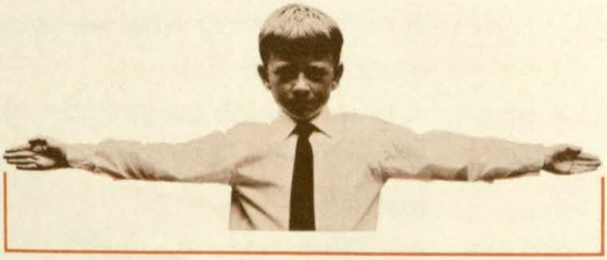


10)



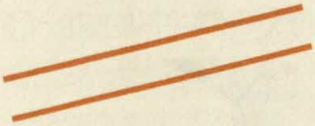
Reference Pages

abacus	A frame for counting. Some use counters, some use beads. It can be used for ordinary numbers, money, weights, measures, etc. *Pages 5, 64.* 
addition	Putting several sets of things together and finding how many there are altogether. *Pages 7, 24, 34, 64.*
axis	One of the lines which make the framework of a graph. *Pages 52, 81.* 
axis of symmetry	The line (which is sometimes real and sometimes imaginary) about which a symmetrical shape balances. *Page 37.* 
bill	A note showing what has been bought and how much it cost. *Page 75.*
block graph	A graph which uses blocks of colour or shading to show how a number changes. It is also called a histogram. *Pages 52, 76, 81.*
brackets	( ) These signs are used to show which part of a sum must be done first. $2 \times (3 + 4) = 2 \times 7 = 14$. *Pages 58, 61.*

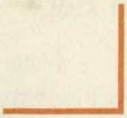
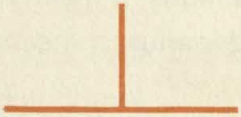
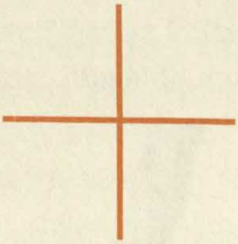
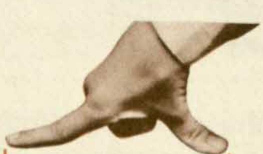
capacity	The amount a container will hold. It is usually measured in gallons and pints. *Page 70.*
count down	Subtract a number, and then keep on subtracting the same number from each answer. 20, 17, 14, 11, 8, 5, 2. *Page 22.*
count on	Add a number, and then keep on adding the same number to each answer. 2, 7, 12, 17. *Pages 11, 30, 38, 41.*
cubit	An old measure of length. *Page 13.* 
difference	The answer to a subtraction sum; how much bigger one number is than another. *Page 23.*
division	Splitting a number into several equal parts. We may have to find how many parts OR how many in each part. We could do this by subtracting the same number many times; division is a quick way of doing this. *Pages 62, 68.*
equal	The same size or value. *Page 68.*
equals	Is the same as. The symbol for this is = . *Page 7.*
equation	A statement with "equals" or = in the middle; both sides must be equal. *Page 7.*
estimate	Decide on an answer without measuring or working out. *Page 12.*
fathom	An old measure of length. *Page 13.* 
figure	A shape; one of the ten symbols used in writing numbers. *Page 4.*

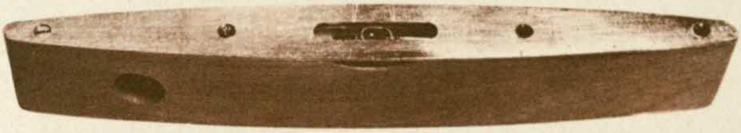
fraction	Part of a whole number. The most common fractions are: **half**—one of two equal parts; **quarter**—one of four equal parts; **third**—one of three three equal parts. A division sum can be written as a fraction. *Pages 68, 82, 84.*
graph	A line, usually drawn on a frame, which tells us something about how a certain measurement changes. *Pages 52, 76, 81.*
horizontal	A line which does not slope up or down is horizontal. *Page 27.*
minus	– The symbol showing subtraction. *Page 19.*
money	£ stands for **libra**; it means **pounds.** s stands for **solidus**; it means **shillings** d stands for **denarius**; it means **pennies.** *Pages 17, 18, 45, 48, 53, 64, 71, 72, 75, 79.*
multiplication	A quick way of adding equal sets. $5 \times 3 = 5 + 5 + 5$ OR $3 + 3 + 3 + 3 + 3$. *Pages 42, 49, 55, 79.*
number	A word or symbol saying how many. *Page 4.*
pace	An old measure of length. *Page 13.*

parallel	Lines which are always the same distance apart are parallel. *Page 79.*



perpendicular	A line which is at right-angles to another is perpendicular. *Page 28.*

plumb-line	A cord with a weight at one end, so that it is always vertical when it hangs down. *Page 26.*
plus	+ The symbol showing addition. *Page 7.*
right-angle	A "square" angle.  Two right-angles together make a straight line.  Four right-angles together make a complete turn. *Page 28.* 
round number	A number which is an exact number of tens or hundreds. *Page 39.*
series	A list of numbers, in which each number is connected in some way with the numbers next to it. Counting up and counting down are ways of making series. *Page 11.*
set	Any collection of any things. *Page 4.*
span	An old measure of length. *Page 12.* 

spirit-level	An instrument for showing if a surface is level or horizontal. *Page 27.* 
straight line	The shortest distance between two points. *Page 15.*
subtraction	Splitting a number into two parts, when you know one of the parts. *Pages 19, 24, 25, 29, 77.*
sum	The answer to an addition sum. It also means any working using numbers. *Page 24.*
symmetrical	Exactly the same shape on one side as on the other. *Page 37.*
time	Time is measured in hours and minutes. Longer periods can be measured in days, weeks, months, or years. Hours before mid-day are called a.m. Hours after mid-day are called p.m. *Pages 41, 50, 57, 58, 60.*
unit	One single thing. You use different units for measuring different things. When you write s d, the unit is pence. When you write ft in., the unit is inches. When you write yds ft, the unit is feet. When you write hrs min., the unit is minutes. When you write lb oz., the unit is ounces. *Page 5.*
vertical	A line pointing straight down towards the centre of the earth is vertical. *Page 26.*
zero	0 A symbol used to show that a place on the abacus is empty. It keeps the tens figure in its place when there are no units. Zero is also called **nought, nil** or **nothing**. *Page 5.*

Addition Table

	9	8	7	6	5	4	3	2	1
1	10	9	8	7	6	5	4	3	2
2	11	10	9	8	7	6	5	4	
3	12	11	10	9	8	7	6		
4	13	12	11	10	9	8			
5	14	13	12	11	10				
6	15	14	13	12					
7	16	15	14						
8	17	16							
9	18								

Multiplication Table

1	10	9	8	7	6	5	4	3	2	1
2	20	18	16	14	12	10	8	6	4	
3	30	27	24	21	18	15	12	9		
4	40	36	32	28	24	20	16			
5	50	45	40	35	30	25				
6	60	54	48	42	36					
7	70	63	56	49						
8	80	72	64							
9	90	81								
10	100									

Longmans' Junior Mathematics
Stages 1, 2, 3, 4, 5 and
accompanying teacher's books

N V Brindley